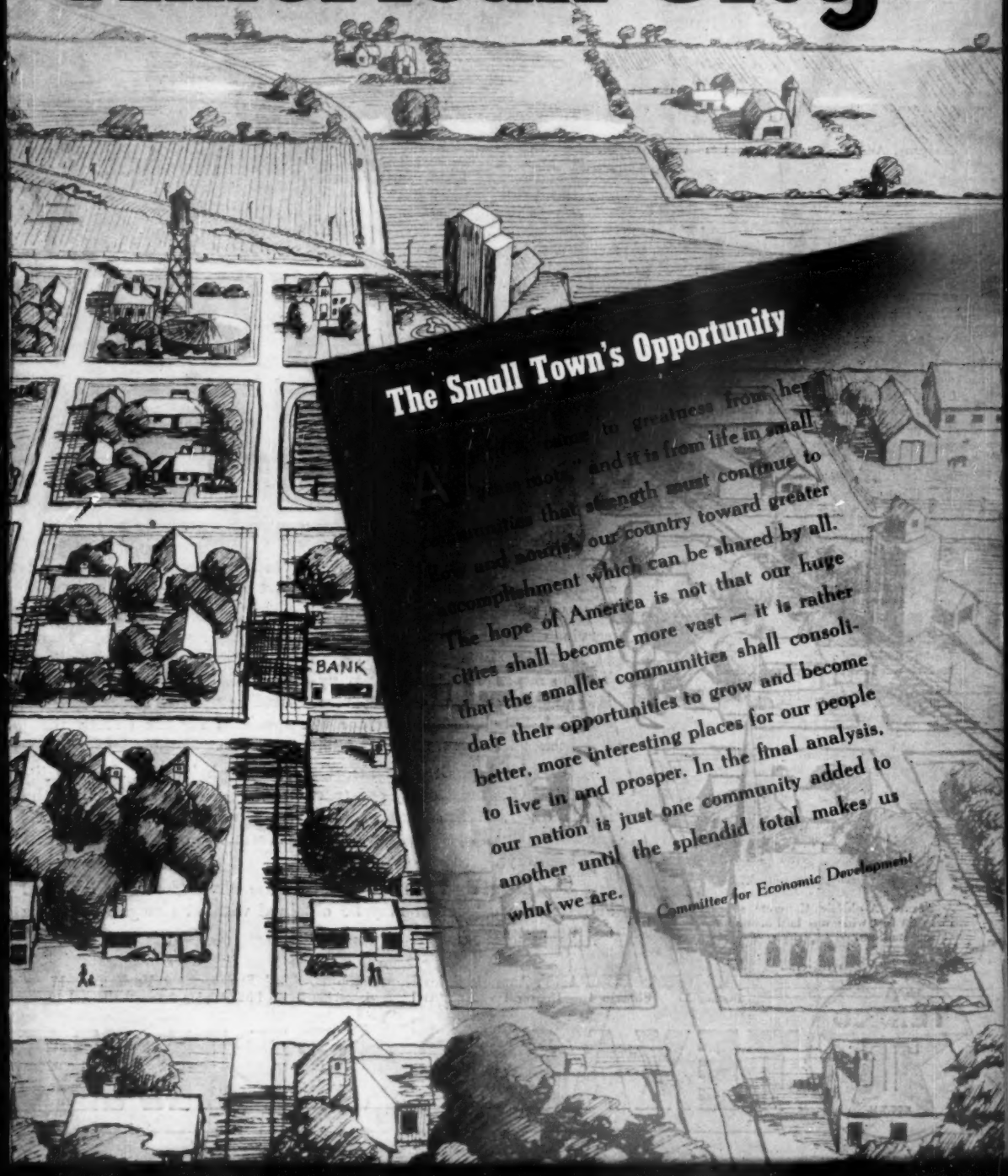
MARCH 1949

The American City


The Small Town's Opportunity
BANK
cities shall become more vast — it is rather
that the smaller communities shall consoli-
date their opportunities to grow and become
better, more interesting places for our people
to live in and prosper. In the final analysis,
our nation is just one community added to
another until the splendid total makes us
what we are.
Committee for Economic Development

University of Texas enlarges its stadium

Access streets, parking areas, sidewalks, area under stands are paved with Texaco Asphaltic Concrete

The enlarged stadium of the University of Texas. Photo taken during game with Louisiana State University. General contractor was R. P. Farnsworth Company, Inc., of Houston. Texaco Asphalt paving was laid by Collins Construction Company, Austin.

Laying 2-inch Texaco Asphaltic Concrete paving on one of the streets leading to the stadium.

Under the stands, the 1½-inch asphalt surface was laid on a crushed stone base.

A Texaco Asphaltic Concrete sidewalk 15 to 20 feet wide was laid around most of the stadium.

The University of Texas has increased the seating capacity of its stadium from 46,000 to 66,000 at a cost of $1,400,000.

An interesting feature of this noteworthy project is the variety of service which resilient, joint-free Texaco Asphalt paving is called upon to perform. In addition to several streets leading to the stadium, Texaco Asphaltic Concrete paving of the hot-mix, hot-laid type was laid on sidewalks and parking areas, as well as the area underneath the seats. A 2-inch asphalt surface was specified for the streets, while 1½ inches was considered adequate elsewhere.

Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils meet every construction and maintenance need of the road builder. Refined from carefully selected crudes, these products are backed by 45 years of successful performance on America's streets and highways.

Two helpful booklets which describe all types of asphalt road and street construction may be obtained without charge by writing our nearest office.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17
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TEXACO
REG. T.M.

TEXACO ASPHALT

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THE FRONT COVER

The sketch shown of a typical small town and the quotation from the Committee for Economic Development are from a new brochure of the University of Illinois Extension Service entitled "Community Survival."

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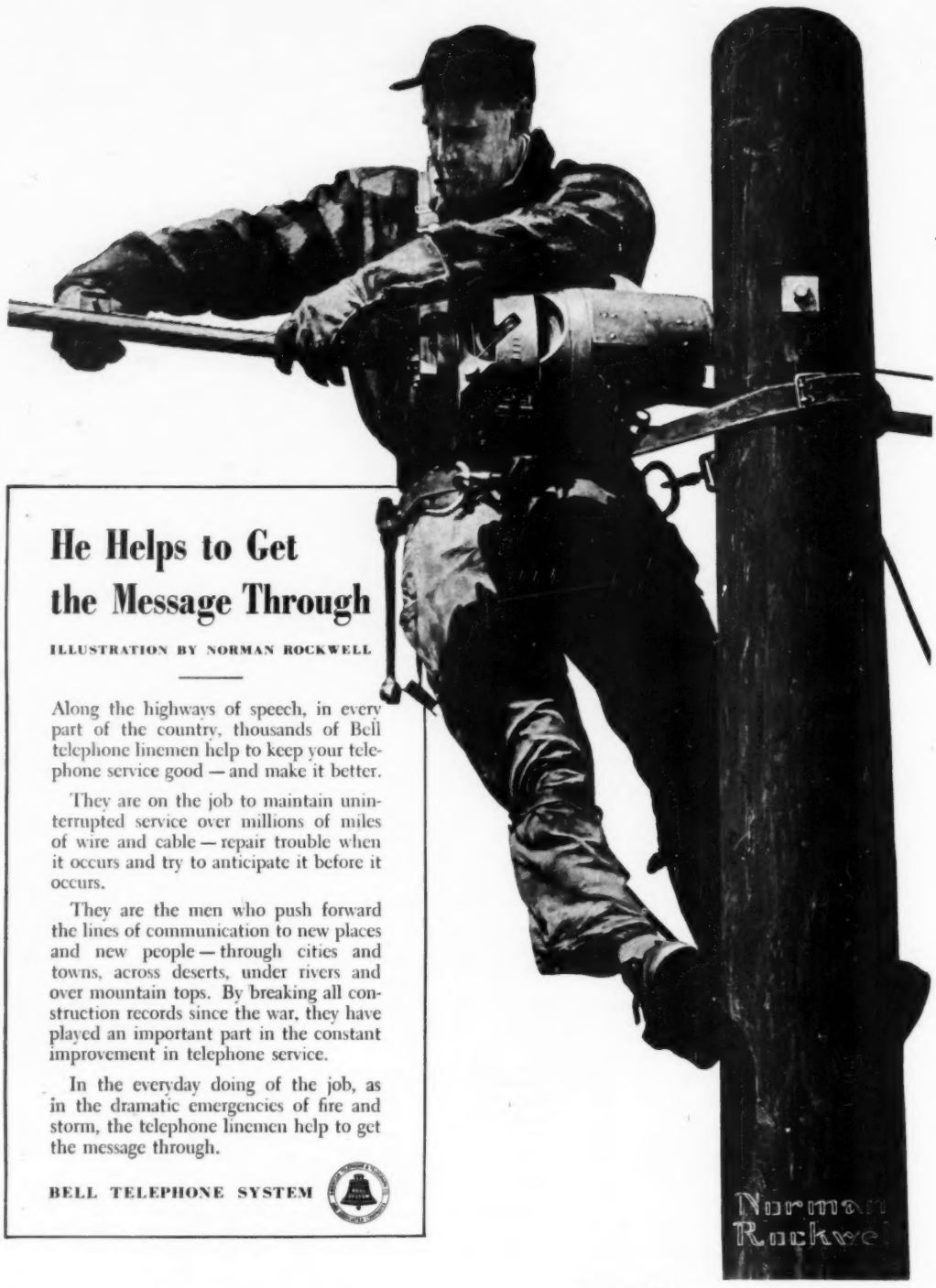


He Helps to Get the Message Through

ILLUSTRATION BY NORMAN ROCKWELL

Along the highways of speech, in every part of the country, thousands of Bell telephone linemen help to keep your telephone service good — and make it better.

They are on the job to maintain uninterrupted service over millions of miles of wire and cable — repair trouble when it occurs and try to anticipate it before it occurs.

They are the men who push forward the lines of communication to new places and new people — through cities and towns, across deserts, under rivers and over mountain tops. By breaking all construction records since the war, they have played an important part in the constant improvement in telephone service.

In the everyday doing of the job, as in the dramatic emergencies of fire and storm, the telephone linemen help to get the message through.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

Let's Understand Municipal Utility Profits

Is it fair to use the earnings of a city's water and electric plants to provide funds for other municipal activities?

PROBABLY more misunderstanding occurs in the field of municipal-utility financing than in that of any other city activity. If all the confused statements on "plant earnings" were laid end to end, they might not reach from here to Timbuctoo, but they certainly would make an impressive string.

Here are the puzzling questions: Is it right for a municipal utility, such as a water-works or electric plant, to provide funds for other city activities? And if is right, how far should this fund diversion go?

The answer to the first question is yes. The second cannot be answered in a word, but some general principles can be stated without too much difficulty.

These utilities are actually businesses, owned and operated by the city for the public benefit. As businesses, they have the right to revenue sufficient to meet these legitimate costs:

1. Operating expense
2. Maintenance and overhead
3. Depreciation reserve adequate to amortize bond payments.

At the same time the municipality has a right to expect this sort of financial support from the utility:

4. Payments representing taxes that would be assessed against the property were it privately owned.
5. A return to the city on its investment as great as that which a private utility would be allowed to earn.

If, however, the bonds are issued with only the plant and its earnings as security, it could be argued that, since the utility derives its sole support from the users of its service, these users should receive the profits under No. 5, if any, in the form of lower rates or additional reserves.

In any event, if a city takes more from its utility than Nos. 4 and 5 represent, then it is diverting revenues that may be needed by the utility to keep it financially healthy.

If a city can take more than these amounts without disturbing the utility maintenance, operating, and amortization fund, then it may be forcing the customer to pay an unfair rate for the service received.

If the city does not receive amounts represented by these items, then it is expecting the taxpayer to subsidize, in part, the operation of municipal utilities.

In essence, a municipal utility is a business that should be operated like a business. It is not an enchanted goose laying golden eggs in order to finance certain municipal activities whose maintenance the public does not feel inclined to guarantee through ordinary tax channels.

Curing the Big City's Hardened Arteries

To the Editor of THE AMERICAN CITY:

Your comments in "Our Municipal Notebook" in the February issue of THE AMERICAN CITY, entitled, "Is the Big City Obsolete?" are very refreshing. It is rather obvious that in their present form our big cities are obsolete. This is pretty generally recognized. What is not so well understood is that whether we like it or not, the elimination of their obsolete elements is the very core of our future city-planning efforts. The immensity of the problem has led a great many to two extreme views, both of which I think are erroneous. They both start with the tacit assumption that the situation is hopeless. One school of thinking maintains that the only approach is through patchwork alteration of the extremely sore spots in the city structure. The other extreme point of view is that, since the complexities of the large city are generating an unregulated decentralization of population and industry, the problem can best be solved by the creation of new communities which can be rationally planned in their entirety. To those who hold the latter view, what happens to the existing cities appears to be of secondary importance.

Our large cities are suffering from arteriosclerosis, but they are nevertheless living and breathing organisms which have significance. We cannot walk away from the patient and let him die of his malady,

The American City Quiz

Match Wits with the Experts

QUESTIONS

1. ***Does any community dispose of all household food wastes through kitchen grinders?***
2. ***What are the three most significant recent developments connected with refuse collection and disposal in most of the larger cities?****
3. ***How far from the curb should residential sidewalks be located?***
4. ***How much of the state and Federal gas tax is raised by traffic on city streets, and what per cent of this gas tax is spent to improve city streets?***
5. ***What is the relation of the maximum use of water in a community to the average?***
6. ***Is there any way to keep tree roots from getting into an existing sewer and clogging it?***
7. ***How much digester gas is required to produce a kilowatt of power in a gas engine?***
8. ***How heavy a snow can be cleared by salt alone?***
9. ***How much of a load does air-conditioning equipment place on a city's water supply?***
10. ***If a steel pipeline is loaded heavily, it may deflect and cause damage at the joints. What can be done to prevent this?***

*Contributed by William A. Xanten, Superintendent of the Division of Sanitation, Washington, D. C., and this year's president of the American Public Works Association.

(Answers on Page 7)

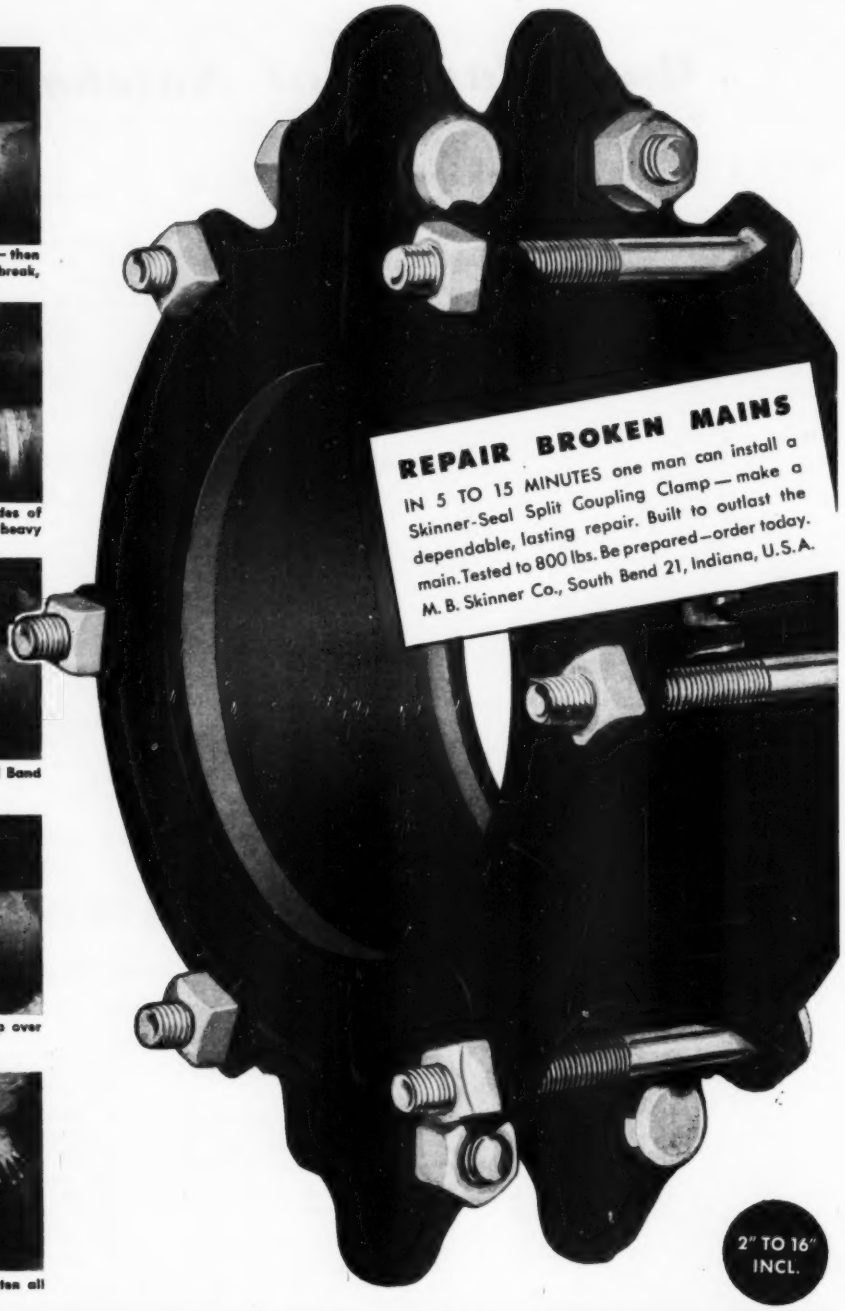
Clean pipe thoroughly — then center brass band over break, bending tab back to lock.

Thoroughly soap both sides of gasket and pipe with heavy soap water.

Center gasket and Monel Band over brass band.

Assemble halves of clamp over pipe and bolt together.

Insert pull bolts and tighten all around evenly.


REPAIR BROKEN MAINS
IN 5 TO 15 MINUTES one man can install a Skinner-Seal Split Coupling Clamp — make a dependable, lasting repair. Built to outlast the main. Tested to 800 lbs. Be prepared—order today.
M. B. Skinner Co., South Bend 21, Indiana, U.S.A.
2" TO 16" INCL.

SKINNER-SEAL SPLIT COUPLING CLAMP

contenting ourselves with protecting a few others from the same disease.

Even if we could prove that a community of 60,000 persons is the ideal size, and even if we built 100 such cities, it would care for only 6,000,000 of the more than 40,000,000 urban dwellers of the U. S. now living in cities with a population of over 100,000. Nor can we assume that in new communities we will be able to avoid those very influences which have tended to create the present situation.

I do not maintain that we should not build new communities, but our interest in them must not be a mechanism of escape from the major problem, which is to pull down the blood-pressure of the sick bodies of our cities as they now exist.

EUGENE HENRY KLABER
Housing and Town Planning Consultant
New York, N. Y.

Trained Recreation Personnel Available

A GROUP of graduate students majoring in recreation at Indiana University will be available for employment by municipal, county, and state recreation departments by June 15 or August 26, 1949.

All the students are working on advance degrees in the field with some specializing in arts and crafts, community recreation, recreational music, commercial recreation, camping recreation, and other fields. The students represent virtually all sections of the United States and several have had a few years of recreation experience.

Local officials desiring further information about these graduate students should write to Johnson S. Townley, Box 426 Smithwood, Indiana University, Bloomington, Ind.

$36,000,000 a Year From Parking Meters

EVERY once in a while, even now, somebody asks THE AMERICAN CITY if parking meters have really been accepted by the cities. Well, 2,100 to 2,200 cities in 48 states are using 650,000 meters, collecting a rough average of $60 per meter per year. Post-war growth of metered parking is shown by the number of metered cities at the close of the last few years.

December 31	*Number of Cities*
1945	474
1946	924
1947	1,564
1948	2,094 *

* Approximate.

Building Officials' Foundation Elects New Chairman

BROR G. DAHLBERG, chairman of the board of directors of the Celotex Corporation, Chicago, has been elected chairman of the board of governors of the Building Officials Foundation.

Mr. Dahlberg succeeds the retiring chairman, Joseph P. Wolff, Commissioner of the Department of Buildings and Safety Engineering of the City of Detroit.

The newly elected executive committee of the Foundation, in addition to Mr. Dahlberg, consists of J. H. Thornley, president, the Western Foundation Company, New York; Loring Washburn, president of S. H. Pomeroy Company, New York; Albert H. Baum, Commissioner of Buildings, City of St. Louis; and Fred C. Bergeson, Building Inspector, City of Rock Island.

The Building Officials Foundation was established three years ago by the Building Officials Conference of America, Inc., in affiliation with industry factors to encourage building-code reform and standardization on a nationwide basis. Its office is at Room 1503, 51 E. 42nd St., New York 17, N. Y.

Bror G. Dahlberg

The American City Quiz

Answers to questions on Page 5

1. No city has adopted the use of the kitchen grinder as a municipal method of garbage disposal. Some seem to be moving in that direction, however. Several years ago, when Crestview, a suburb of Kansas City, Mo., was developed, the builder installed grinders in each house. More recently, in Los Angeles, a builder supplied them for all homes and apartments he was erecting. In Dearborn, Mich., the city is in the process of studying an ordinance requiring kitchen grinders in each new home.

2. (a) The establishment and enforcement of anti-smoke ordinances, thereby reducing open-fire refuse burning, back-yard incinerators, and leaf burning. (b) Less food waste contributed by the householder. (c) The increased use of kitchen grinders for food-waste disposal. All three developments appear to be contributing to a "combustible rubbish" problem of no small proportions.

3. Frank Harley, civil engineer, Fair Lawn, N. J., says that they should be located 5 to 10 feet from the curb, a location where pedestrians prefer to walk.

4. About half the gas-tax funds are from traffic on city streets. However, cities get only 5% of the gas tax revenue. This is a feature of gas-tax diversion that highway authorities for some reason do not like to talk about.

5. The maximum daily use, says L. R. Howson of Alvord, Burdick and Howson, Chicago consulting engineer, is 50% greater than the average day for the year. The maximum peak hour is 50% more than the maximum daily average.

6. John Hood, Superintendent of Sewage Treatment, Ridgewood, N. J., eliminates them by assigning a man to go to each home and place two pounds of copper sulphate in the toilet bowl. The tree roots die and break away. The trees remain undamaged. An application every two or three years seems sufficient.

7. Henry W. Taylor, New York City consulting engineer, states that internal-combustion engines powered by digester gas will use approximately 25 cubic feet of gas per kilowatt-hour generated.

8. This basically depends on the temperature of the air, since the salt only lowers the melting point of water. If the air temperature drops below the freezing point of the brine created by the salt, then the salt, of course, cannot work. In Newark, N. J., where the air temperature rarely falls below 0° F., rock salt alone is used on snows a maximum of 4 inches deep. When the snowfall is over 4 inches, the city plows and then salts the storm.

9. According to studies by Elwood Bean, Principal Assistant Engineer, Philadelphia Bureau of Water, air conditioning will require only 0.05 gallons per minute per ton of refrigeration, if good conservation is practiced. Conservation can be effected through the use of spray ponds, evaporative condensers and other devices that make it possible to re-use the water required for cooling rather than to use water directly from the mains and then waste it. Without these conservation devices, air conditioning can place a tremendous load on the water supply, acounting to as much as 2.5 gallons per minute per ton of refrigeration.

10. Syracuse, N. Y., faced this problem when installing a 54-inch pipe supplied by the Bethlehem Steel Company. City Engineer Nelson Pitts strengthened the pipe by welding steel collars around each section. These collars were mounted vertically on the pipe. One was located 1½ feet from the end of each length, and one was placed in the middle. These gave stiffness to the pipe so that the Dresser couplings were not injured.

Send in your suggested questions with the answers on municipal topics for use in this feature. The AMERICAN CITY will make a small payment for each question accepted.

The picture tells the story . . .

Not much left to say—just that Pontiac, Michigan, has a new 1,000,000-gal. Horton radial-cone bottom elevated tank. The tank, which is 52 ft. to bottom, furnishes gravity water pressure to improve the water service and reduce operating costs.

Ask our nearest office to tell you how elevated storage will improve water service.

CHICAGO BRIDGE & IRON COMPANY

Atlanta 3 ..... 2114 Healey Bldg.
Birmingham 1 ..... 1502 North Fiftieth Street
Boston 10 ..... 1002—201 Devonshire St.
Chicago 4 ..... 2127 McCormick Bldg.
Cleveland 15 ..... 2236 Guildhall Bldg.
Detroit 26 ..... 1501 Lafayette Bldg.
Havana ..... 402 Abreu Bldg.
Houston 2 ..... 2101 National Standard Bldg.
Los Angeles 14 ..... 1503 General Petroleum Bldg.
New York 6 ..... 3308—165 Broadway Bldg.
Philadelphia 3 ..... 1616—1700 Walnut Street Bldg.
Salt Lake City 1 ..... 1501 First Security Bank Bldg.
San Francisco 11 ..... 1233—22 Battery Street Bldg.
Seattle 1 ..... 1301 Stuart Bldg.
Tulsa 3 ..... 1625 Hunt Bldg.

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PENNSYLVANIA

Water Supply and Treatment

AWWA Nominates 1949-1950 Officers

DR. A. P. BLACK, professor of chemistry at the University of Florida, has been nominated for president of the American Water Works Association. W. Victor Weir, president of the St. Louis County Water Company, has been nominated for vice-president, and W. W. Brush, editor of *Water Works Engineering*, has been renominated for treasurer. In the absence of other nominees, they will be automatically elected to office.

At a meeting of the AWWA Board of Directors, the following men were elected to honorary membership:

Thomas L. Amiss, Superintendent and Engineer, Department of Water and Sewerage, City of Shreveport, La.

Henry Berry, Past Chairman, Metropolitan Water Board, London, England.

M'Kean Maffitt, former Superintendent of Water and Sewerage, Wilmington, N. C.

The Diven Medal for 1948 will be awarded to Harry A. Faber, secretary of the Chlorine Institute for his work in the field of chlorination. The Goodell prize for 1948 will be awarded Laurie M. Leedom, construction engineer, Newark, N. J., water department, for his paper, "Shutdown Procedure in Main Breaks," delivered at the New Jersey Chapter meeting of the Association last year.

Aqua-Ammonia Savings At Kansas City

KANSAS CITY, Missouri, believes it did a bit of pioneering when it substituted aqua ammonia for ammonium sulphate for use with chlorine as the sterilizing agent in the treatment of its water supply. The substitution was made in December 1946, when the availability of ammonium sulphate was threatened by the coal strike. Investigation at that time revealed that ammonia could be obtained as aqua ammonia from a converted war plant in the midwest that was making anhydrous ammonia for industrial purposes, and that ammonia was considerably cheaper in this form than was the sulphate. The liquid feeder to apply the aqua ammonia, the 12,000-gallon tank to store it, and the accessory pipe and equipment cost $2,025.

The basis for the cost advantage of aqua ammonia over ammonium sulphate may be shown by the figures in the following tabulation:

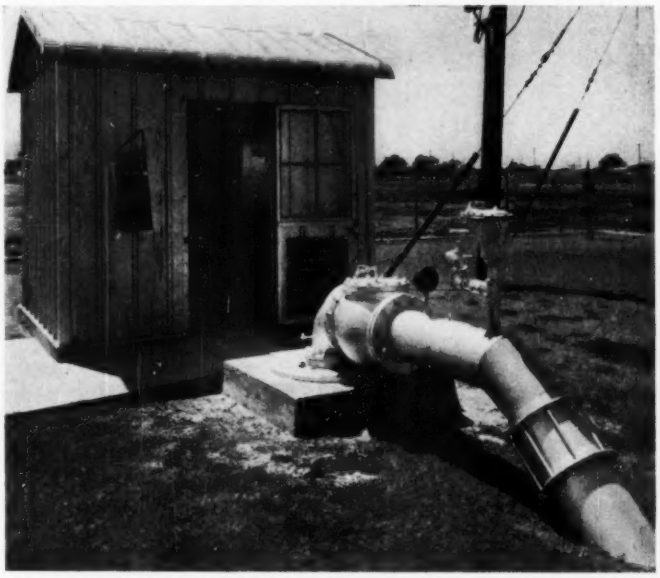
	Price per Cwt.	*Available Ammonia*	*Cost per pound of Available Ammonia*
Ammonium Sulphate	$2.49	23%	10.8c
Aqua Ammonia	1.49	29%	5.1c

Past uses of ammonium sulphate indicated the need of about 70,000 pounds of available ammonia per year; this is at the rate of about 2.6 pounds per million gallons of water treated. M. P. Hatcher, Kansas City's Water Department Director, estimates that at a saving of 5.7 cents per pound, the use of 70,000 pounds of available ammonia per year brings about a saving of $4,000. Stated in another way, ammonium sulphate would have cost $7,600 and aqua ammonia cost $3,600.

Long Beach Uses Underground Pumps

OUT of sight, out of mind, is an old saying that is not looked on with too much favor by the average water superintendent who has his share of water distribution problems. Out of sight, out of danger, is a somewhat different slant on the same phrase that the officials of Long Beach, Calif. (population 142,032, 1940 census), have applied to their new pumping stations.

In Long Beach, city officials have decided upon the use of Byron Jackson submersible pumps for their city wells. These pumps, with the motors and pumping units in the well and underground, located almost at the same level as are the pump impellers and screen, make the pumping operation safe against vandalism or possible bombing or sabotage if that appears as a problem. The officials state, however, that this is only a secondary reason for their choice. This type of pump eliminates pumping houses and avoids the ill-feeling that might result in new housing districts if a pumping station were in sight and out of harmony with the rest of the neighborhood. It also eliminates continuous noise.



One of six identical submersible installations for the city of Long Beach. The metal house, to be removed, at present houses constant recording instruments.

It's MI·CO PARKING METERS

from FAIRBANKS, ALASKA

to CORAL GABLES, FLORIDA

SEE REGULATIONS ON OTHER SIDE
INSERT ONE COIN AT A TIME
TURN HANDLE TO STOP AFTER EACH COIN
FREE PARKING ON SUNDAYS
MI-CO METER

Excessive heat or extreme cold—alternate freezing and thawing—hail, sleet, snow or ice, do not interrupt the smooth, continuous operation of MI-CO Parking Meters. The reliability of MI-CO's becomes apparent when you see how ruggedly they are built and the small number of working parts the housing contains. Should it be necessary to service a MI-CO Meter the mechanism is so simple that a maintenance man is usually able to take it apart, make the adjustment and get it back in operation in a few minutes right at the meter location. Nonproductive time is reduced to a minimum, and upkeep expense is so low it's negligible. MI-CO Parking Meters pay out quickly because they are seldom out of order. It will pay you to check the features in MI-CO Meters and get all the facts regarding their dependable operation in installations from Fairbanks, Alaska to Coral Gables, Florida . . . from the Pacific to the Atlantic. We'll be glad to send you complete information.

MI-CO METERS, 231 Court St., Covington, Ky.

Division of The Michaels Art Bronze Co., Inc.

•

Representatives Wanted

Sewerage and Sewage Treatment

Saint Paul Adopts Ferric Sulphate For Vacuum Filtration Work

BECAUSE no bids were received on ferric chloride, the Minneapolis-St. Paul Sanitary District has now adopted the use of ferric sulphate to condition sludge prior to vacuum filtration. When feeding and coagulating details have been perfected, the plant operators expect nearly equivalent dosing figures.

For the past nine years the District has been usins ferric chloride. But in June of 1947 we changed to ferric sulphate because of the ability of the Tennessee Corporation to supply its product, Ferri-Floc, on a regular delivery schedule. This involved changes in plant operation. Ferric sulphate is supplied in the dry granular form in bulk carloads, while ferric chloride has been supplied in solution form in tank cars.

The plant, fortunately, had been built to handle chemicals either in the dry or solution form. But economical sludge coagulation is a process that is sensitive to changes in a number of factors. These include the type of chemicals, the solution concentration, the point of addition to the sludge, and the method of mixing.

Ever since the regular use of ferric sulphate was adopted, the operators have endeavored to improve the handling, feeding, dissolving and mixing of this chemical. These efforts began showing results in the last two months of the year, when the dosage dropped to an average of 1.02% and the lime dosage dropped to an average of 2.96%.

For the first 11 months of 1948, the chemical dosage averaged 1.19% Ferri-Floc and 3.10% CaO. For a five-year period from 1942 through 1946, when ferric chloride was used, the average dosage was 1.10% $FeCl_3$ and 3.06% CaO. We plan to conduct some test runs to compare $FeCl_3$ and Ferri-Floc, alternating the use of the chemicals every few days during the next few months to obtain additional data on their relative efficiency.

Late in October a feeding change had been made in the point of addition of the ferric sulphate to the sludge which improved operations. Since that date the ferric sulphate solution has been added to the discharge hopper of the bucket elevator, rather than in the conditioning tank, as formerly done with both ferric sulphate and ferric chloride. The higher lime dosages recorded during the summer months were caused in part by poor-quality quicklime received while the contractors were placing a new lime kiln in operation.

The plant uses six Oliver vacuum filters. During 1947, they produced 0.29 pounds of dry solids per square foot of filter area used. This was calculated by multiplying the number of square feet of filter area available by the number of drum revolutions. On the conventional basis of pounds per square foot (fixed area of 500 square feet per filter) per hour of operation, each filter averaged 3.28 pounds of dry solids.

KERWIN MICK, *Chief Engineer*
Minneapolis-St. Paul Sanitary District

N. Y. Streams Polluted, Legislator Argues

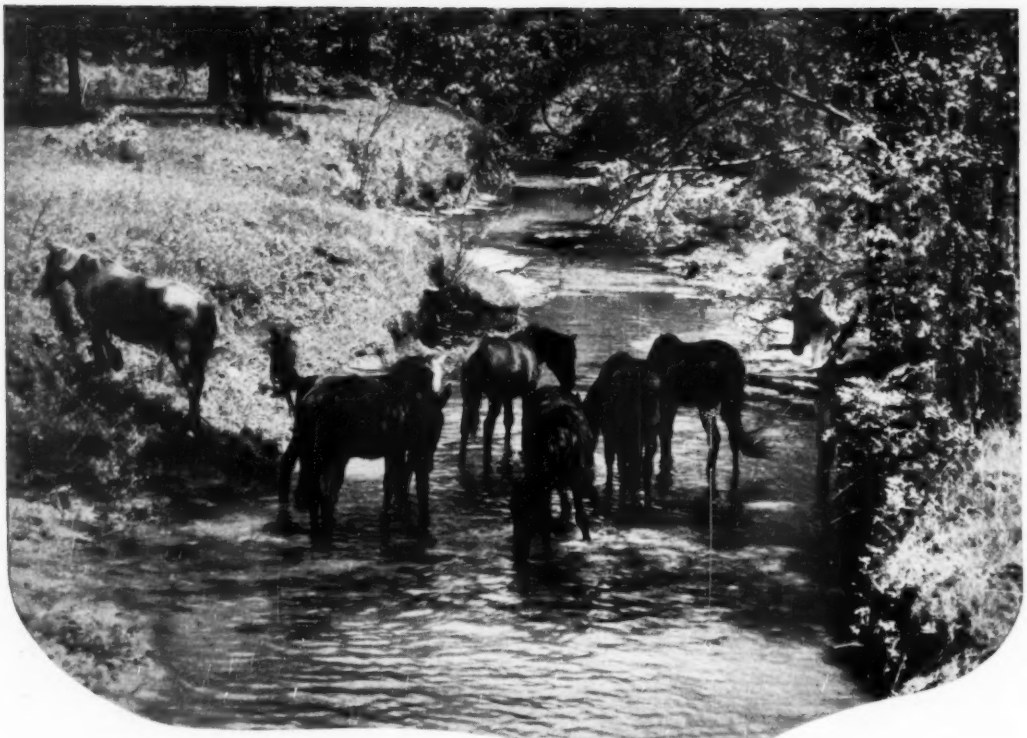
EVERY watershed in New York State is suffering from poilution, and unless antipollution measures are taken at once, safe, clean water will become only a memory, warned Assemblyman Harold C. Ostertag, of Attica, N. Y., chairman of the New York Joint Legislative Committee on Interstate Cooperation. Assemblyman Ostertag addressed a joint luncheon of the American Society of Civil Engineers' Sanitary Engineering Division, the New York State Sewage Works Association, and the American Water Works Association.

"More than a billion gallons of filth flow untreated into New York's water courses every 24 hours," Mr. Ostertag declared. "The staggering burden borne by New York's water consists of raw sewage from 115 municipalities with a population of 4,726,000, plus corrosive or putrid wastes from thousands of industries. In addition, 424 communities of 500 to 1,000 or more lack sewers and sanitary disposal systems and add to the contamination of surface waters through seepage or discharge of wastes.

"While many communities, industries, and individuals have assumed the costs of waste treatment in the interest of the general welfare, the task of restoring and maintaining New York's waters to a state of safe usefulness is one that must be assumed by everyone. Pollution abatement is either everybody's job or nobody's job. It is neither fair nor possible for some of our communities and industries to clean up the filth created by all of them. Unless we take steps now to check and eliminate the burden of pollution . . . New York State will have lost its greatest basic resource."

Storm Sewers in El Paso, Texas

Storm sewers are high on the list of public-works responsibilities of El Paso. A 7-foot main is required to meet the needs of the trunk-line interceptor recently installed to carry off the heavy, sudden rains common to that area.



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Street Cleaning and Refuse Disposal

Kansas Collection Charges

REFUSE collection is a utility operation in many cities. How it is handled in typical Kansas cities was summarized in the Kansas Government Journal for October. In four of the cities the charges are as follows:

	Winfield	*Garden City*	*Liberal*	*Independence*
Population (1940 census)	8,816	5,925	4,509	11,457
Residential charge	50c per month	75c per month	50c per month	75c per month
Collection, garbage	twice weekly	once weekly	once weekly	twice weekly
Collection, trash	once weekly	once weekly	once weekly	twice weekly
Business charge	12½c per barrel	$1-$25 per month	contract basis	$1.50-$25 per mo.
Collection	daily	daily	daily	daily
Billing Method	utility bill	utility bill	water bill	postered bills
Revenue return	$22,000	.....	.....	$34,300
Per cent of cost	65	.....	.....	See below

Garden City uses two 12-cubic-yard Gar Wood Load-Packers on 2-ton Dodge trucks, one 12-cubic-yard Marion dump body, one 1½-ton International truck with an 8-by-14-by-6-foot steel open-type body, and a 49-hp crawler tractor equipped with a Drott bullclam.

Independence raised its rates from 50 cents per month per residence last February. The refuse is hauled to a municipal dumping area where the trash is burned and the garbage fed to hogs. Last year the city purchased $12,000 worth of hogs and sold them for $160,000, but lost money on the 50-cent fee for residential collections.

Independence sends out post-card bills monthly, separately from the water bills. The City Manager believes this to be a mistake. He anticipates getting a billing machine to allow rendering one bill for both water and refuse.

One other city, Parsons, Kans. (population 14,962, 1940 census) was listed in the summary. Parsons, however, has a contract with a private collecting firm. Its rates, which support the service, are as follows:

Residential charge .....75c per month
Collection, garbage, trash. twice weekly
Business charge ..... contract
Collection .....daily, if in contract
Billing method ..... posted bills

Dirt, Leaves, and Mowing

KANSAS CITY, Mo., has two Ford tractors with Dearborn attachments that make it possible to perform a multitude of tasks for the Public Works Department all year round. The work ranges from bunching and loading wet leaves, for cleaning and loading dirt from sidewalks and streets after a heavy rain, for mowing weeds, for assisting snow loaders, and for cleaning snow from crosswalks in the downtown area. They are also used for loading snow-control abrasives from stock piles into dump trucks, as well as for many other miscellaneous tasks.

They can be used for leaf removal, as shown in the accompanying illustrations. For this work they were equipped with ¾-yard buckets, also adaptable for snow removal. A ⅜-yard bucket is available when handling dirt, debris, sand, salt, and other material. During the summer the same units will be used for mowing.

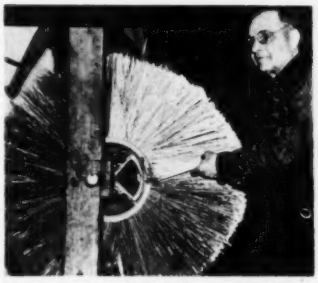
The ¾-yard bucket boosts the leaves handily into the waiting dump truck.

One man can bunch leaves easily with this bucket equipped tractor loader.

CLARENDON REA
Superintendent of Street Cleaning
Public Works Department
Kansas City, Mo.

Rutherford, N. J., Gets New Street Sweepers

George Lehritter, of Rutherford's Public Works Department, takes over controls of the city's new street sweeper.

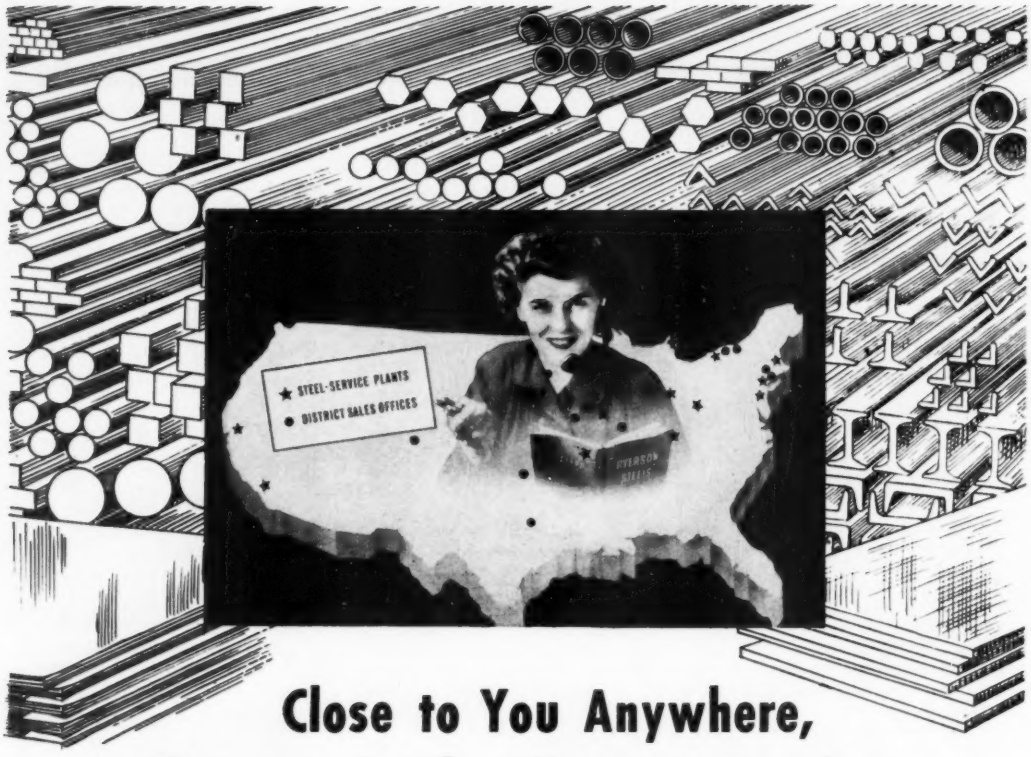


Maintenanceman Charles St. George at work installing fibers in the broom.

RUTHERFORD, N. J. (population 14,915, 1940 census), Department of Public Works waited a long time to get its street-cleaning service on an efficient, mechanized basis. However in 1948, Councilman Paul W. Blye, chairman of the Public Works Committee, was able to obtain the equipment.

The equipment he obtained was an Elgin sweeper that Superintendent of Public Works William Dorgeloh uses to gather the street debris. With it, he sweeps the main arteries and the downtown business streets daily before 6 a. m.; he tries to reach the rest of the city on about a two-week schedule.

In the Borough Yard shop, Charles St. George of the Maintenance Department has the job of replenishing the worn brushes.



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No matter where you are, or where you want steel delivered, there's a Ryerson plant, with diversified Ryerson steel stocks, within quick shipping distance. A network of thirteen big plants, plus twelve district sales offices, makes Ryerson steel service the most comprehensive and convenient in the nation.

Each big Ryerson plant is set up to operate independently with large stocks and high-speed cutting and handling facilities, plus its own complete staff of carbon, alloy and stainless steel specialists. Yet each Ryerson plant and office offers the advantages of a unified organization with a hundred and six years of practical steel experience.

These days, with the record-breaking demand for steel, we may not always have the exact size or quantity you need. But you can be sure we will do our very best to serve you. Usually, from long experience, we are able to suggest an available alternate steel. So, for steel and steel service, call the Ryerson plant or office nearest you.

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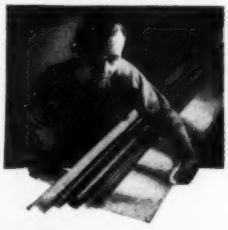
Your nearby Ryerson plant is a quick, convenient source for everything in stainless steel. Bars, plates, sheets, tubing, pipe and other stainless products in many types and finishes are on hand. And stainless from Ryerson stocks means Allegheny stainless, the time-tested product of America's oldest stainless producer. Need stainless? Call Ryerson.



RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS: NEW YORK, BOSTON, PHILADELPHIA, DETROIT, CINCINNATI, CLEVELAND, PITTSBURGH, BUFFALO, CHICAGO, MILWAUKEE, ST. LOUIS, LOS ANGELES, SAN FRANCISCO

Street Construction & Maintenance

How Columbia, Mo., Maintains Its Streets

By EVERETT STONE
Street Commissioner

TO maintain 70 miles of streets, 46 of which are paved, we use the following pieces of equipment:

A 1944 Austin-Western grader
A 1947 I C International Hilift
A 1946 portable LeRoi compressor
A small Case tractor for mowing purposes
An 8-ton tandem Galion roller
A distributor with 600-gallon tank capacity for pouring asphalt
6 dump trucks
1 old 1933 Austin-Western sweeper
1 pickup

We have a 20-man crew that we keep at work the year round.

We find that the grader, the Hilift, and the trucks work very well together in grading streets, ditching and on other street construction. This type of front-end loader works well when handling dirt, or loose sand or rock, but is not so good for other excavation.

When resurfacing streets we have been using cut-back asphalt most of the time. We did use two cars of tar this summer and if handled right and weather conditions permitting, it will give good results. However, it was more difficult for us to handle, since we were not used to it; it also cost about six cents more per gallon than asphalt.

We usually mix the cut-back asphalt with grader on the street where it is to be used, spread it, and then roll it. When resurfacing an existing street already paved, it will sometimes be necessary to pour a tack coat first. We occasionally have used emulsion asphalt, the difference being that it mixes with water. It gives good results and can be used in damp or wet weather.

Who Pays for Sidewalks?

By ARTHUR RICHARDS
Village Engineer
Larchmont, N. Y.

RECENTLY the question of sidewalk construction costs and how they are paid came before the Westchester, N. Y., County Village Officials' Association. As chairman of the committee on county affairs, it became my duty to contact the communities involved and see how this was handled.

Our survey showed that at street intersections, all municipalities pay the cost of constructing and repairing walks within the intersection lines, and usually municipalities pay for repairs where the roots of trees between the curb and sidewalk displace the sidewalk slab.

In new subdivisions, or developments, the policy of all municipalities is for the owner to pay the full cost for any street sidewalk. Some villages on a 100% petition in a street block will assume 50% of the cost. Under special conditions, some municipalities pay the entire cost of the sidewalk which has a special public use.

An inspection of sidewalks throughout the County discloses that most municipalities are quite lax in requiring property owners to maintain the sidewalks and abutting ground in a uniformly satisfactory condition.

ALL SIDEWALKS—FIRST CONSTRUCTION COST

Per Cent of	*Paid by Property Owner*	*Paid by Municipality*	*Shared by Both*
Cities	100%	0	0
Villages ..	52%	24	24 (1)
Towns ...	100%	0	0 (2)

(1) 2 villages pay 50%. 1 village pays 15%. In 2 villages the village pays the labor cost and the owner pays the material cost.

(2) The Town Law and Highway Law provide various methods of financing sidewalk costs. Where a sidewalk district was formed, the abutting owner paid 50% of the cost and the remainder of the owners in the district paid the other 50%. As a very general rule, the abutting property owner pays the entire cost of constructing and repairing sidewalks.

ALL SIDEWALKS—REPAIR AND REPLACEMENT COST

Per Cent of	*Paid by Property Owner*	*Paid by Municipality*	*Shared by Both*
Cities	100%	0	0
Villages ..	62%	24	14 (1)
Towns ...	100%	0	0 (2)

(1) 2 villages divide on labor and material as above. 1 village pays 50%.
(2) Same as in the first table.

Cleaning up around a new construction—an International Hilift loads dirt after an Austin-Western grader had graded it into the street.

More City Use of State Gas Tax, Senator Humphrey Urges

ONLY when the revenue from motor vehicle user taxes are divided justly between the cities and the states can the motorist achieve the maximum dividend. This was one of the points made by Senator Hubert H. Humphrey, junior senator from Minnesota, in his talk before the American Road Builders Association meeting held recently in Washington, D. C.

In many states, he said, there still is a regrettable misunderstanding about this issue. Local municipal streets carry anywhere from 20 to 50% of the total automobile traffic, and a fair division of highway user taxes means that 20 to 50% should go for construction and maintenance of local streets.

WHY CITIES PREFER GAMEWELL
SIMPLICITY OF OPERATION

When she observed a fire in a nearby factory in Dorchester, Massachusetts, eight year old Thomasina De Beneditto knew exactly what to do -- *So she pulled the box and called the Fire Department.* She shows, in the illustration, how she operated the box.

The method of operating

GAMEWELL
FIRE ALARM BOXES

is simple,

easily understood even by children,

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GAMEWELL fire alarm boxes, promptly used when fire occurs, will save property -- and may save human lives.

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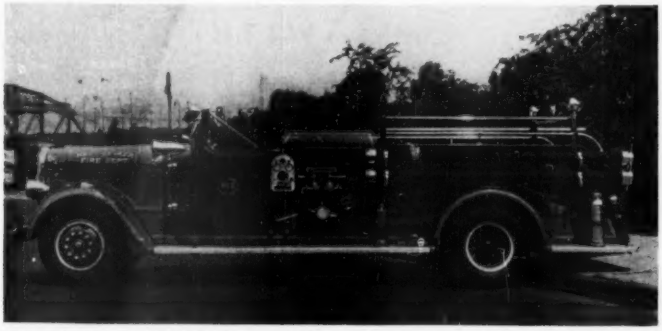


Rensselaer's new Ward LaFrance triple combination 750-gallon pumping engine.

By LOUIS F. DOMBROSCH, *Chief*
Fire Department
Rensselaer, N. Y.

OWING to a liberal policy on the part of our City Council, our fire budget is of a size that permits reasonable replacements. These are now planned ahead until 1951.

Our largest pieces of apparatus are two American-LaFrance 1,000-gallon combination pumping engines and hose cars purchased, respectively, in 1927 and 1929. These will be replaced in 1950 and 1951. A similar piece, of 750-gpm capacity, with booster installed in 1925, will be replaced in 1949.

In 1948 we purchased a 750-gallon Ward LaFrance combination pumping engine and hose car with booster. The upper halves of the Ward LaFrance 2-stage centrifugal pump and the transmission are bolted to the lower halves by only one horizontal flange, permitting easy disassembling if necessary. The body, 70 inches wide, carries 1,500 feet of hose. The tank holds 250 gallons. The Waukesha 240-hp truck engine has six cylinders of 5¼ bore and 6-inch stroke, with a displacement of 779 cubic inches. The truck climbs stiff grades at peak engine speeds, such as 28% in first, 12% in second, 8% in direct, and 6.3% in overdrive under a gross vehicle weight of 19,500 pounds and standard rear axle ratio of 5¼ to 1. It is capable of road speeds up to 66 mph.

The year before, we installed an 85-foot American-LaFrance aerial ladder with a metal ladder that folds into three sections, making a tillerman unnecessary. This truck carries a deck gun, a main ladder with 3-inch lead-in hose, and a heavy-duty searchlight with Homelite generator. It is manned by two paid firemen in addition to volunteers.

Each truck is equipped with an Indian fire pump for use on grass and chimney fires, fog nozzles on both booster and 2½-inch lines, and liquid foam and CO_2 extinguishers.

Our five companies are manned by the chief, two part-time paid assistants, 12 drivers, and 250 volunteers having their own offices and regulations. The complete Gamewell fire-alarm system works with five circuits and has room on the board for six additional circuits.

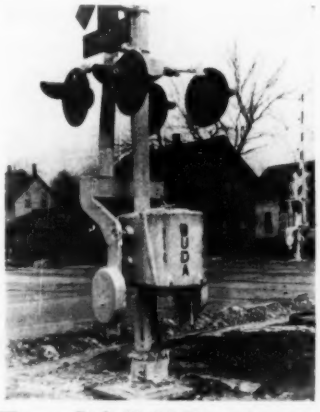
9% of Illinois Fatalities Occur at Grade Crossings

FATALITIES in Illinois caused by motor-train collisions comprised 9% of the total of motor-accident fatalities.

The most common motor-train collision occurs when a train strikes a vehicle, but there are a number of accidents where motorists run into trains, especially at night. All of these accidents occur at points where railroads cross streets or highways at grade. Among the 10 states having the most grade crossings, Illinois tops the list with 16,021. Texas is second with 12,883, and the other states in the group have from 8,000 to 11,000 crossings. At only 21% of the crossings are there flashing-light signals, crossing-gates or watchmen. Half of these are located in the cities. A complete analysis is kept by the State Highway Department of the hazard which exists at each of the crossings on the basis of "exposure factor" or probability of collisions between trains and vehicles. Using these ratings, all of the crossings are classified as to relative hazard in determining a priority for improved protection.

New installation of protective equipment, such as flashing-light signals and combined flashing-light signals and gates, or the modernization of such existing installations, has been a vital part of the Illinois program to build greater safety into all highways. If the crossing is located on a township road, city street, county road, or other highway not on the primary system, the suggestion is transmitted to the public body having control of the highway in question.

In 1935 only 683 of the grade crossings on the primary highway system were protected by watchmen, gates, or flashing-light signals. Since that time modern flashing-light signals or combined gates and flashing-light signals have been installed at an additional 493 crossings at a total expenditure of $1,218,195. Present plans contemplate improved protection at 394 additional crossings shown by their hazard ratings as most in need of such improvement.



The new Buda Model 71 crossing gate at Blue Island, Ill.

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. . . Its efficiency actually releases personnel for other vital services.

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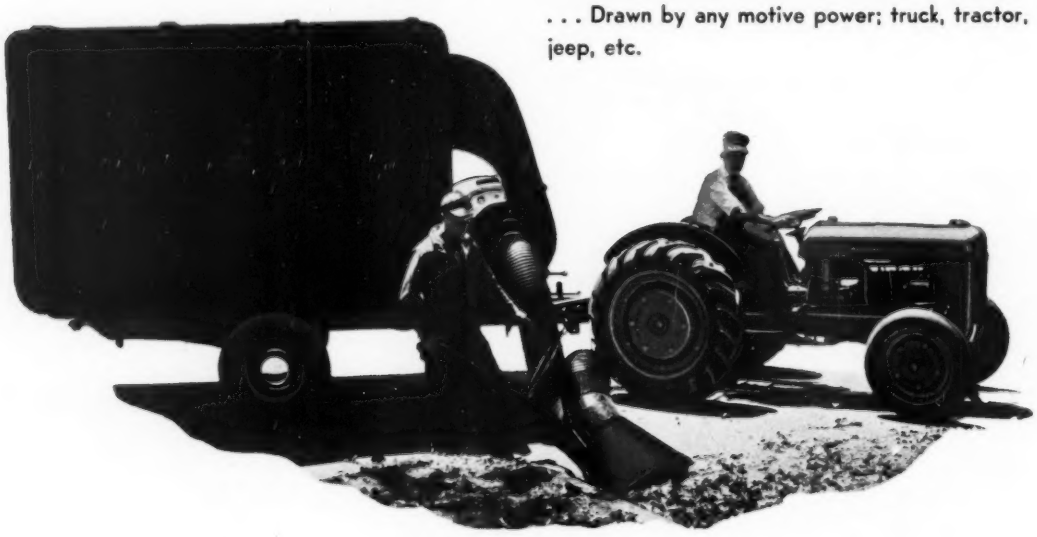

FEATURES . . .

FLEXIBLE INTAKE HOSE
easily maneuverable into driveways, under and around autos, in gutters, around corners and catch basins, and under cross-walks.

RUGGED ROTOR BLOWER ASSEMBLY
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Airports and Aviation

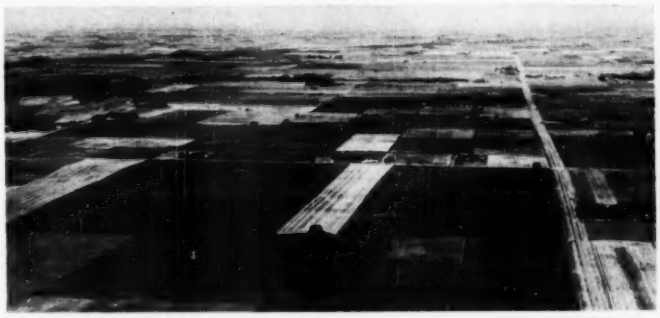
Ft. Dodge, Iowa, Builds Class III Airport

THE City of Fort Dodge, Iowa (population 21,895, 1940 census), is now building a Class III Airport which will probably be ready for use by October 1949.

First action to build a municipal airport was taken by the City Council of Fort Dodge on July 18, 1947, by adopting a resolution approving application for a site acquisition, and accepting the Engineer's report and tentative master plan for the development of an airport. The Lechner Engineering Company of Ames, Iowa, had recently completed the survey of a tentative airport site about two miles directly north of the city limits and about three miles from the business district. This site consists of 447 acres with only one set of building improvements to be removed, whereas other sites that had been looked over in most cases had three or four sets of farm buildings—making the cost of the site considerably more.

On August 4, less than a month later, official approval came from Washington that we had been allocated $168,000 of Federal Funds to supplement the $210,000 received on a bond issue, and approved by the voters in November 1946, at the General Election. In the meantime three of our local real-estate board members had been appointed to make an appraisal on the proposed airport. Offers had been rejected by all except one owner of 99.94 acres, which the city purchased and paid for immediately. A short time later condemnation proceedings were started on the balance of about 347 acres by having the Sheriff select a jury of six commissioners to estimate and submit a report of the amount of damages the landowners should have by virtue of condemnation proceeds. This report was submitted on January 6, 1948, and raised the valuation on the 347 acres approximately $25,000, which the landowners again rejected. On January 26, 1948, a resolution was passed by the City Council to appeal to the District Court from the appraisal made by the Sheriff's jury and immediately to retain John Mitchell and Thomas Healy, local attorneys, as special counsel for the appeal proceedings.

A few days later all the landowners filed an appeal, starting suits against the city, and asking the city to pay $150,000 more than the Sheriff's jury had set, on appraisal of the land. Two rulings in District Court, on April 1 and June 6, 1948, were both in favor of the city, and after many conferences by all parties involved, the entire tract of



A square mile of this farmland will be used for airport service in Ft. Dodge.

347 acres was finally acquired by stipulations placed on file at the Court House, the final one being filed November 3, 1948.

In the meantime, on April 24, 1948, another Federal grant came through amounting to $34,800, making a total Federal fund to date of $202,800, to supplement our local funds of $210,000, or a total of $412,800.

Plans will proceed from now on with requests for bids on the draining and grading of this site, and the contracts should be let in plenty of time to start the actual work as soon as the frost is out of the ground. Contracts should also be let in the very near future for construction of a 100-foot by 4,200-foot runway, and we now expect to have the job all completed by October 1, 1949.

We have contemplated feeder airline routes and expect to begin using the field as soon as it is completed. Fort Dodge will then have one of the finest airports in the Middle West.

C. B. PILCHER
Commissioner of Parks and Public Property

Air Lift Operates on U. S. Standards

RUSSIAN planes in the Berlin area steer clear of instrument flights in bad weather because they know every cloud is "stuffed with American C-54 planes" flying the Berlin air lift on instruments and GCA (the radar system of ground controlled approach).

This was the word brought back to the Oakland, Calif., Municipal Airport by Glenn Simonson, chief airways-traffic controller for the Civil Aeronautics Administration at this field, who returned recently after organizing and installing the airways-traffic-control system for the Berlin air lift between Wiesbaden and Berlin.

Simonson was recalled into the service as a major by Major General William H. Tunner, commanding general of the combined air-lift task force, with headquarters at Wiesbaden, under whom Simonson had served in World War II when he installed a similar system for the planes flying "the Hump" between India and China.

Simonson said his system controls the movements of 800 British and American plane flights a day between the Wiesbaden, Rhine-Main, and Fassburg bases on one side and the Tempelhof and Gatow airports in Berlin on the other. The Americans alone on Air Force Day had a total of 600 flights.

Tempelhof cannot be compared to Oakland Airport, Simonson said. When the Americans arrived in Berlin they found the runways made of sod, Hitler apparently planning to use only slow Junkers on the field. Two modern runways were constructed by the Americans and a third is now under construction. The airport administration building has one unique advantage, an overhanging roof where the planes can taxi right up to the administration building under the roof.

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But rust prevention is only one job. *Texaco Rock Drill Lubricants EP* do many others. Their high film strength and adhesiveness protect moving parts against wear. They lubricate effectively even under extremely wet conditions. They resist oxidation and flow readily at all operating temperatures.

Texaco Rock Drill Lubricants EP meet the exacting specifications of leading rock drill manufacturers and the Compressed Air and Gas Institute.

Let a Texaco Lubrication Engineer show you how effective lubrication can assure you longer drill life, faster drilling and lower maintenance costs. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

For greater compressor efficiency, keep valves clean, rings free, air lines clear by lubricating with *Texaco Cetus, Alcaid or Algol Oils.* For heavy-duty service and wet conditions, use *Texaco Regal Oils (R & O).* Your Texaco Lubrication Engineer will recommend the ones best suited to your requirements. • Keep your hydraulically-operated construction equipment working more efficiently — systems free of rust and sludge — by using *Texaco Regal Oils (R & O)* as the hydraulic mediums.

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Tune in . . . TEXACO STAR THEATRE presents MILTON BERLE every Wednesday night. METROPOLITAN OPERA broadcasts every Saturday afternoon.

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Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write directly to the manufacturers, or circle the identifying numbers on this coupon and mail to THE AMERICAN CITY MAGAZINE, 470 Fourth Ave., New York 16. We will see that catalogs are sent to you without expense or obligation.

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Name ..... **Position** .....

Address .....

Septic Tanks Cleaned

540 No more open tanks, diaphragm hand pumps, shovels and other makeshift equipment for cleaning septic tanks. Bulletin 7-ST-11 from the Gorman-Rupp Co., 343 North Bowman St., Mansfield, Ohio, describes the Odorless Sanitary Cleaner, which can clean a 500-gallon tank in 15 minutes, a 1,000-gallon tank in 20 minutes. The unit may also be used to transport water and for emergency fire-fighting, sprinkling, and dewatering.

Two Sets of Controls on Valves

541 Altitude valves for tank and reservoir made by the Ross Valve Mfg. Co., Inc., P.O. Box 596, Troy, N. Y., come with two sets of controls—automatic hydraulic, and electric remote. The hydraulic pilot normally operates the valve; the electric pilot is used for emergency only. Write for data about the various models available.

Rugged Curb Stops

542 The Diamond Patent Cap inverted-key curb stop is a round-way stop designed for copper service pipe at both ends. The inverted key avoids excessive wear and is loosened, as pressure is applied downward, by a turning motion. It comes in sizes of ½, ¾, 1, 1¼, 1½, and 2 inches. It is also available in stop-and-drain pattern. Write for information about this style or other brass goods, pumps, and oil equipment to the A. Y. McDonald Mfg. Co., Dubuque, Iowa.

How Much Profit From Parking Meters?

543 If constant repair work is required, if run-down springs or jammed coin slots give the driver free parking time, revenue is lost. Mi-Co meters are designed to prevent this. Write for data describing the 10 models available to Mi-Co Meters, 231 Court St., Covington, Ky.

Sweeper Keeps Streets Clean

544 The Wayne motor sweeper sweeps, cleans, picks up, is simple to maintain, since it is made with a Ford Model V-8 truck engine—and parts are easy to obtain. These sweepers are available for prompt delivery. Write for *A Clean Sweep*, the Wayne Mfg. Co., 1201 E. Lexington St., Pomona, Calif.

Standard Aviation Buildings

545 *Standard Building by Luria*, from the Luria Engineering Corp., Dept. Y10, 509 Fifth Ave., New York 18, N. Y., describes how airports may obtain anything from an administration building to a hangar at low cost. These are permanent, steel-frame structures, and they are available immediately.

Digging Where Others Fail

546 The Badger Machine Co., Winona, Minn., will send you literature describing its hydraulically controlled digger that assures clean-cut edges. Trench shields cause all crumbs or spillage to drop back into the trench to be removed by shovels. Road speeds are 5 mph forward and 3 mph backward. There are four forward digging speeds and one reverse.

Eliminate Leaf-Clogged Streets and Sewers

547 The Good Roads Machinery Corp., Minerva, Ohio, will send you data showing how to eliminate street- and sewer-clogging problems resulting from falling leaves. Two-man-operated, the leaf collector is drawn by truck, tractor, or jeep, and collects dry, wet, or saturated leaves. The flexible intake hose is easily maneuverable into driveways, around corners, and under parked cars.

Gunite Repairs For Concrete Structures

548 If there is in your municipality a concrete tank, reservoir, swimming pool, or other structure, sewer, or steel encasement that is deteriorating and eventually will cost a lot of money to repair, you may be interested in reading up on the Gunite method of repair and reconstruction. Gunite, a sand-cement mixture, shoots dry-mixed materials against the structure; experiments have proved that the bond between Gunite and the surface against which it is applied is stronger than the material to which it is applied. Write for Bulletin D2400 to the Cement Gun Co., Allentown, Pa.

Don't Build Snow Banks—Remove the Snow

549 The Snogo throws snow into a parkway or loads it directly into a truck—a full load in 10 to 20 seconds. The force behind the Snogo compacts the snow as it loads it, giving the truck a greater capacity. Write for data to the Klauer Mfg. Co., Dubuque, Iowa.

Don't Pump Sand

550 The McCurdy sand and water separator prevents pumping pipelines and water towers full of sand. They are of the vertical-pressure type, helical flow, centrifugal action, built of fabricated steel for any capacity or working pressure. Write the McCurdy Sand and Water Separator Co., 4875 Pacific Blvd., Vernon 11, Los Angeles, Calif.

(Continued on Page 25)

Reduce Pipe-Placing Costs

551 The Hydrocrane cuts down manpower while speeding up pipe-installation processes. The unit also does all the work of digging pits and uncovering pipe on leak-checking jobs. Write the Bucyrus-Erie Hydrocrane Div., 7923 W. Greenfield Ave., Milwaukee 14, Wis.

Fire Pumps With 3-Stage Characteristics

552 The Barton-American duplex multi-stage centrifugal fire pump, manufactured by American-Marsh Pumps, Battle Creek, Mich., gives the following service: large capacities at normal pressures delivered through the capacity pump only; normal high pressures delivered through the high-pressure pump only; pressures as high as 400 pounds delivered with both pumps operating in series and at low engine speed.

Fire and Police Radio

553 The Industrial Div., Dept. AA3, of the Philco Corp., Philadelphia 34, Pa., will send you data on central-station equipment in both bands with high and low power ratings, and matching mobile equipment; remote control units, and monitors. These units are valuable in keeping the main station in constant contact with working vehicles from the fire, police, utilities, and emergency departments.

Protective Coatings Prevent Corrosion

554 Koppers Co., Inc., Pittsburgh 19, Pa., will send you data on its Bitumastic 70-B enamel which, coated to a pipe interior with a glass-smooth spun lining, protects against rust, corrosion, and tuberculation—and the flow capacity remains high.

A Good Coagulant Yields Good Water

555 Ferri-Floc users have found that coagulation is effective over a wide pH range; color flocs may be formed in the very acid range; true hydrated ferric oxide flocs may be formed at pH 9-10 or even higher for the removal of turbidity and manganese; time requirements for floc formation, conditioning, and selling is relatively short while filter runs are comparatively long; manganese is removed at pH values above 9; effluents may be produced that are exceedingly low in both iron and aluminum; hydrogen sulphide is removed and objectionable tastes and odors decreased; Ferri-floc does not form mud balls and is less subject to breaking-through on the filters. Write for literature to the Tennessee Corp., Grant Bldg., Atlanta, Ga.

W-SPEED PATROL BD-3

BD-2 AD-3 AD-4

Choose the size

FROM ALLIS-CHALMERS' COMPLETE LINE

FOUR DIESEL-POWERED MODELS — all full-fledged construction machines — each one easily handles ditching, sloping, scarifying, black-top mixing, snowplowing, sod removal... as well as maintenance. Differences in weight, speeds, horsepower and cost enable you to match the machine to the job to be done . . . and to your budget.

LOW COST W-SPEED PATROL — long popular as an economical maintainer with townships, cities, counties... and with contractors for keeping up hauling roads and finished sections on their job. Gasoline powered, electric lights and starter, simple-to-operate controls.

Whatever your motor grader needs . . . your Allis-Chalmers dealer can fill 'em!

SAME OUTSTANDING ADVANTAGES ON ALL AD AND BD MODELS

ALLIS-CHALMERS

TRACTOR DIVISION · · MILWAUKEE 1, U. S. A.

that fits the job

- A strong, shock-absorbing tubular frame that also protects control rods inside frame.
- High axle and throat clearance for handling bigger windrows without interference.
- Rounded construction of steering knuckles, spindles and drag links to prevent material from packing . . . assures unhindered operation.
- "Roll-away" moldboard that rolls instead of pushes material and thus speeds up work.
- A full circle revolving blade that allows grading forward or in reverse.
- A blade held firmly on its work, through direct down pressure, for precision cutting.
- A smooth-running, economical GM 2-cycle diesel engine that packs power in every stroke.
- Complete operator comfort with full vision, responsive controls, self-energizing brakes.

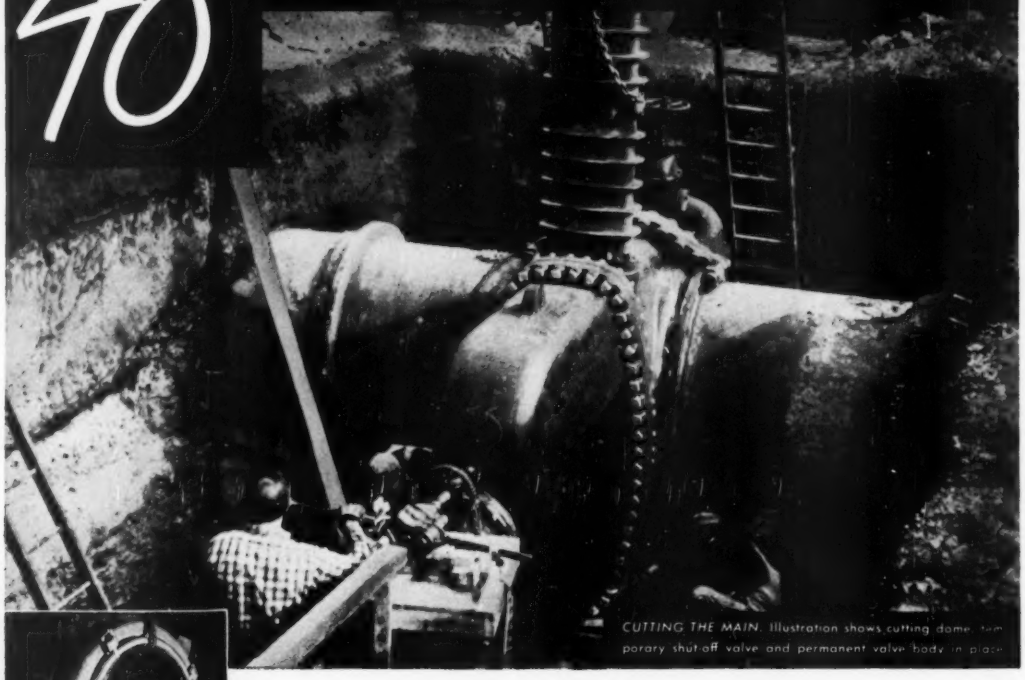
VERSATILE

FOR ALL KINDS OF USERS
FOR ALL TYPES OF MAINTENANCE

W-SPEED PATROL
31.5 brake hp. — 4,900 lbs.

48" GATE VALVE INSERTED UNDER PRESSURE

to Avoid Stoppage of Steel Production



CUTTING THE MAIN. Illustration shows cutting dome, temporary shut-off valve and permanent valve body in place.

Section removed from main

Finished insertion

At a large Eastern steel mill uninterrupted production depended upon a thirty year old, 48" cast iron main, carrying sea water used for cooling the furnace jackets. The main was in poor condition — badly corroded and electrolytically pitted.

In order to provide an emergency by-pass in the event of line failure, a gate valve was required. Since the mill could not risk even a momentary shut down, Smith was asked to insert the valve under pressure. Although of unprecedented size, the insertion was completed in four days without interruption of service or reduction in pressure.

***First 48" insertion ever made under pressure. One month later a second 48" gate valve was inserted by Smith for the Water Bureau, Philadelphia, Pa.**

29

GATE VALVES
CHECK VALVES
FIRE HYDRANTS
INSERTING VALVES
TAPPING SLEEVES AND VALVES
WATER SERVICE BRASS GOODS

THE A. P. SMITH MFG. CO.

ESTABLISHED 1877

EAST ORANGE, NEW JERSEY

FLOOR STANDS
INDICATOR POSTS
TAPPING MACHINES
INSERTING MACHINES
PIPE CUTTING MACHINES
CORPORATION TAPPING MACHINES

Your Catalog Supply Service

Please Use Coupon on Page 21

What Kind of Surface Paving?

556 Seaman Motors, Inc., 292 North 25th St., Milwaukee, Wis., will send you three bulletins describing how its Pulvi-Mixer shows up to advantage in any type of mixing job working in place or from windrows. Bulletin No. 25 describes soil-stabilization methods; No. 50, soil-cement processing; No. 60, macadam construction.

Convenient, Portable Electric Generators

557 Portable electric plants bring labor-saving, fast-working power to any spot in your municipality for running mowers, fighting fires, and as stand-by equipment. Gasoline-powered models from 350 to 35,000 watts are available, and diesel engine models from 2,500 to 35,000 watts. Write D. W. Onan & Sons, Inc., 5485 Royalston Ave., Minneapolis 5, Minn.

Melting Ice on Streets

558 Nalco 818-C, incorporated with salt used for melting ice on streets, is a corrosion inhibitor that not only prevents corrosion of iron by the salt, but also is non-toxic, non-staining to clothes, and has approximately the same solubility characteristics as the salt. Write for the booklet, *Nalco System*, to the National Aluminate Corp., 6216 West 66th Place, Chicago 38, Ill.

On-the-spot Service, Repair Of These Parking Meters

559 A brochure has been issued by the Magee-Hale Park-O-Meter Co., Commerce Exchange Bldg., Oklahoma City 2, Okla., which describes the meter's Fix-Fast unit construction that permits thumb-and-finger disassembly for on-the-spot service and repair. Another feature is the self-sealing winding aperture that keeps out snow, rain, and dust. The mechanism is designed to prevent jimmying or lock-picking through the coin compartment door.

Eliminate Unnecessary Poles

560 Through the use of tubular steel poles may be achieved a neatness, durability, and, most important, a safety factor far exceeding previous installations of haphazard and fire-hazard wooden-pole networks to support overhead electric lights, and street railway and telephone wires. For literature describing Elreco tubular steel pole tables and pole fittings, write the Elreco Corp., Cincinnati 25, Ohio.

Alternating Flash on Road Signs Gets the Motorist's Attention

561 Danger and warning roadside signs equipped with Winko-Matic alternating flash on-and-off mechanism provide visibility for at least a half-mile. The unit is sealed against wind, rain, snow, heat and cold. It may be bolted or welded on existing signs, or can be furnished installed on any type of sign. For literature write the Winko-Matic Signal Co., 750 Broadway, Lorain, Ohio.

Reduce Pipe-Line Head Losses With These Check Valves

562 Because of its free-flow design and balanced streamlined disc, head losses are reduced to a minimum in Chapman Tilting Disc check valves. The only moving part in this check valve is the balanced hinge-pinned disc. When opening the disc lifts away so that there is minimum wear on the seat, and once opened it rides smoothly on the flow minimizing wear on bearings and pins. Send for a bulletin that shows how hammering and consequent strains on pipelines are eliminated: the Chapman Valve Mfg. Co., Indian Orchard, Mass.

Clean Lawns and Streets With Power Sweeper

563 The Modern rotary power sweeper, in 36- and 48-inch sweeping-width models, sweeps any place a rake or broom can be used. Propelled by a 4-cycle gasoline motor and equipped with large-capacity baskets, the sweepers may be used on lawns, yards, or streets. Write for literature to the Modern Mfg. Co., 160 N. Fair Oaks Ave., Pasadena 1, Calif.

Featherweight Pipe Locator Shows Exact Location

564 The new Model 87 Goldak pipe locator gives the exact location of buried pipes, mains, services, gates, tees, ells, or stubs. The one-man instrument, weighing just 11 pounds, requires no hard-to-get parts; it operates on standard miniature radio tubes and flashlight batteries. Write the Goldak Co., 1544 West Glenoaks Blvd., Glendale 1, Calif.

Disinfect Mains Against Contamination

565 Before placing new mains in service, or following repairs to old mains, they should be disinfected against contamination. Pittchlor can be placed dry in the mains before admitting water, or a 1%-available-chlorine solution can be injected near the beginning of the new section. Write the Pittsburgh Plate Glass Co., Columbia Chemical Div., Fifth and Bellefield, Pittsburgh 13, Pa.

Lawn Care

566 O. M. Scott & Sons Co., Marysville, Ohio, issues a bulletin entitled *Lawn Care* that gives all the inside tricks for obtaining good lawns—lawns that are attractive and able to withstand weeds and adverse weather.

Pumps For Unusual Dredging Jobs

567 The Morris Machine Works, Baldwinsville, N. Y., will send you literature describing its line of pumps designed for the unusual dredging job as well as for restoring eroded beaches, deepening lakes or channels, cleaning out reservoirs, beautifying parks and lakes, filling in undesirable lowlands.

Mark Buildings With Enduring Plaques

568 Newman Brothers, Inc., 659-665 W. 4th St., Cincinnati 3, Ohio, makes bronze or aluminum plaques for permanently marking buildings or recording dedications. Write for a catalog.

Odor-Free Refuse Incineration

569 Incineration has proven to be an economical and sanitary means of disposing of refuse. An advantage of the incinerators made by the Nye Odorless Incinerator Co., Inc., 51 E. 42nd St., New York 17, N. Y., is that even a neighbor close to the plant will not find it an odorous nuisance.

Light Maintainer With Heavy-Machine Features

570 The Oliver-Henke maintainer has finger-flip hydraulic controls, a blade that is easily angled from the driver's seat, leaning wheels, hydraulic scarifier and steering, and a 12-foot blade. Variable-speed governor on the engine assures minimum fuel consumption. Write the Oliver Corp., Industrial Div., 19300 Euclid Ave., Cleveland 17, Ohio.

New Sprayer Holds 53 Gallons

571 The L-80 Lawrence Aero-Mist sprayer has a V-bottom supply tank, holding 53 gallons, that assures thorough mixing and agitation. Its shut-off valve gives instant spray control. The sprayer can swing in a complete circle, enabling the directional air nozzle to be aimed in any direction—no more blind spots. Write for all the details to the Lawrence Aero-Mist Sprayer Co., 58b Federal St., Greenfield, Mass.

No Sewer Problems With These Food Waste Grinders

572 The Disposall, which is connected to the kitchen-sink drain, takes care of the kitchen garbage—a sanitary and efficient method of disposal. For information about it, write Hotpoint, Inc., 5600 W. Taylor St., Chicago 44, Ill.

Better Service From Trolley Coaches

573 The Ohio Brass Co., Mansfield, Ohio, has included in its Catalog No. 25 descriptions of many new devices and improvements made to old products for use on trolley-coach and electric-railway systems. Selection of the correct overhead devices and the repair parts for these devices has been simplified.

Night-and-Day Visibility With Aluminum Street Sign

574 The Lake Shore Markers, 654 W. 19th St., Erie, Pa., will send you its catalog No. 20-5, describing the low-cost and no-maintenance features of its suburban street marker. These aluminum street signs are visible day and night, are simple to install, and last.

Joint Cast Iron Water Mains Without Caulking

575 Leadite, which is shipped in powder form, requires no caulking and no large bell-holes. The substance is melted and then poured. Write for information to the Leadite Co., Girard Trust Co. Bldg., Philadelphia 2, Pa.

Three Units In One For Street Maintenance

576 The Littleford No. 101 Utility spray tank has a spray bar for small application jobs, a hand spray for patch work, and a pouring-pot outlet for crack-filling work. Write Littleford Bros., Inc., 500 E. Pearl St., Cincinnati 2, Ohio.

Heavy-Duty Storage Batteries

577 Storage batteries made by the Hand Laboratory, Nyack, N. Y., are heavy-duty with hand-pasted tank-formed plates, glass mats, acid- and heat-resistant micro-porous rubber separators, splash decks, and hard-rubber containers. They can be used for police radio cars, sanitation trucks, snowplows, sweepers, emergency trucks, ambulances, and fire apparatus.

Low Loading Height On Fully Enclosed Refuse Truck

578 The Roto-Pac compresses refuse from an unpacked volume of 200 pounds per cubic yard to more than 600 pounds, thus tripling the load on the truck. The body operates on a continuous-loading principle. Other features of the sanitary, fully enclosed refuse collector are a low loading height and fast discharge. Write for literature to the City Tank Corp., 5309 97th Place, Corona, Long Island, N. Y.

(Continued on Page 27)

Planned Lighting

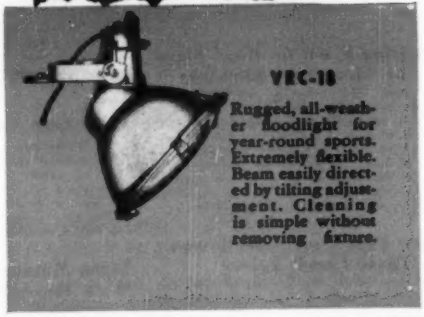
FOR 'ROUND-THE-CLOCK RECREATION

YOU CAN BE SURE IF IT'S Westinghouse

Don't let darkness rob the people in your community of the chance to play. Give them the opportunity to get healthful recreation, long after sundown, with planned floodlighting.

The results can be far-reaching: Juvenile delinquency reduced, health standards improved, community spirit raised.

A Westinghouse Lighting Sales Engineer will be glad to help you plan a layout for your recreation areas. His services are available through your Westinghouse distributor. *He will gladly co-operate with you, your local utility and electrical contractor in the development of a plan.* J-04188



VRC-18

Rugged, all-weather floodlight for year-round sports. Extremely flexible. Beam easily directed by tilting adjustment. Cleaning is simple without removing fixture.

COMMERCIAL • INDUSTRIAL • FLOOD • STREET • AVIATION

Westinghouse Planned Lighting *Pays*

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Your Catalog Supply Service

Please Use Coupon on Page 21

Reduce Accidents with Traffic Markers and Signs

579 When the driver can see where he is going, and recognize the hazards ahead, accidents are reduced. *Non-Corrosive Signs by Columbia* describes the color-permanent, vandal-resistant Columbia signs that help make this possible. Write the Columbia Sign & Signal Corp., 303 Schofield Bldg., Cleveland 15, Ohio.

Fence for Every Purpose

580 Page Steel and Wire Div. of the American Chain & Cable Co., Inc., Monessen, Pa., is distributing a 48-page brochure, DA641, that gives details of its various types of chain-link fencing. Among the kinds made are fence with and without a top rail, with and without barbed wire. Depending on the purpose for which the fence is to be used, various strengths and numbers of wires are employed in the manufacture of the fence mesh, top rail, and barbed wire.

Chemicals For Water Processing

581 Solvay Process Division of the Allied Chemical & Dye Corp., manufacturer of soda ash for water softening, liquid chlorine for water purification, and various other chemicals needed in the processing phases of water conditioning, offer the following technical and engineering service bulletins: No. 5, *Soda Ash*; No. 7, *Liquid Chlorine;* No. 8, *Alkalies and Chlorine in the Treatment of Municipal and Industrial Waters;* No. 11, *Water Analysis.* These booklets are obtainable free of charge from Solvay Sales Division, Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

Street Flushers Handle Many Jobs

582 The Etnyre Superliner model street flusher with rear-engine drive may be used not only to keep streets clean but also for fire-fighting, tree-spraying, and similar jobs. The Superliner comes with 3 nozzles, a 600-gpm pump, and an 800- to 3,000-gallon tank. Write E. D. Etnyre & Co., Oregon, Ill.

Cutter, Mower, Roller, Dump Cart

583 The Multiple-Purpose Flink-Rawls power mower not only serves as a cutter, mower, roller, and dump cart, but can also be equipped for use as a grader, snowplow, or spreader. It has a 5-hp engine, goes at a rate of 3 mph in operation and 13 mph on the highway, runs for 8 hours on 1¾ gallons of gas. Write for data to the Flink Co., Dept. S-1, Streator, Ill.

Use These Starters with Your Plant's Electric Motors

584 The Allis-Chalmers line of alternating-current full-voltage starters to meet the requirements of any type of motor drive is described in a new 12-page bulletin that includes construction features and uses of manual and magnetic across-the-line starters, across-the-line combination starters, reversing starters, and push-button control stations. Write for Bulletin 14B7132, Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

High-Intensity Runway Lights Bring Planes In Safely

585 The General Electric AGA high-intensity runway lights are designed to operate successfully under low-visibility conditions, and variable-brightness control makes operation without glare possible under varying weather conditions. Write for Bulletin GEA 4931-a, Apparatus Dept., General Electric Co., Schenectady 5, N. Y.

Couplings Absorb Strain Every 40 Feet of Pipe

586 Every 40-foot section of steel pipe is cushioned against the stresses of earth movement and freeze-and-thaw contractions and expansions by Dresser couplings with specially-compounded rubber gaskets that assure joint tightness. Plain-end pipe in standard lengths is used and the coupling is attached to the pipe with a wrench. Write Dresser Mfg. Div., 59 Fisher Ave., Bradford, Pa.

Mark Obstructions With Visible Torches

587 To prevent accidents resulting from collisions with obstructions or construction equipment, use Luck-E-Lite highway torches. Write for information to the Embury Mfg. Co., Warsaw, N. Y.

If You Have Parking Meters You Need Coin Counters

588 Abbott coin-handling machines sort, count, and wrap money taken from parking meters at the rate of as many as 800 coins per minute. Manual or electric-driven, the machines are made by the Abbott Coin Counter Co., 143rd St. and Wales Ave., New York 54, N. Y.

The Advantages of This Fire Truck

589 The American-LaFrance-Foamite Corp., Elmira, N. Y., makes a cab-ahead-of-engine pumper that provides high maneuverability, visibility, short turns, and fast acceleration.

Good Pipe Reduces the Cost of Water

590 Centrifugally spun, reinforced, concrete pressure pipe with double rubber gasket joints for moderate operating heads in sizes from 12 to 48 inches, 50- to 150-foot head, 20# to 65# pressure has a low first cost, is free of maintenance, and is easy to install—all money-saving factors that give the delivered water a low cost. Write for information to the American Pipe and Construction Co., P.O. Box 3428, Terminal Annex, Los Angeles 54, Calif.

Straight-Length Pipe Makes Curved Installation

591 One of the big advantages of Universal cast iron pipe is that it is flexible: curves are laid with straight lengths, so that special fittings are not required. Other savings result from the fact that the pipe and joint are one—no calking or pouring of lead or lead substitutes, no gaskets, no bell holes, no wide trench holes, no tools other than a ratchet wrench, nothing to work loose so there is no leakage, and no maintenance cost. Write for a catalog to the Central Foundry Co., 386 Fourth Ave., New York 16, N. Y.

Flies and Mosquitoes Can Be Controlled

592 The Combustion Equipment Div., Todd Shipyards Corp., 81-16 45th Ave., Elmhurst, Queens, N. Y., will send you data describing its Tifa equipment for fog-spraying away flies and mosquitoes, as well as for other types of spraying jobs.

Bronze Tablets Form Permanent Record

593 An illustrated catalog may be obtained from the United States Bronze Sign Co., Inc., Dept. AC, 570 Broadway, New York 12, N. Y., giving descriptions of the many types of bronze tablets that may be obtained for municipal buildings, cornerstones, statues, and signs.

New Type Street Lights

594 Permalux, a new Suburban luminaire in stainless steel, has rectangular distribution to direct light along the street and sidewalks, a stainless-steel reflector that provides permanent reflectivity, a variable cutoff angle from 45° on the house side to 83° up and down the street. Write the Joslyn Mfg. & Supply Co., 20 N. Wacker Dr., Chicago 6, Ill.

Protection with Good Hydrants

595 The Mathews hydrant contains all its working parts in a removable barrel that is replaced in a matter of minutes without excavation if the hydrant is injured by a vehicle. Water cannot reach the thread to rust it or deposit sand; the revolving nut is protected against rain and dust; the main valve is compression-type, insuring against flooding and strain on the internal parts. Write to R. D. Wood Co., Public Ledger Bldg., Independence Square, Philadelphia 5, Pa.

Use the Right Fence

596 Fence can serve merely as a psychological deterrent, as in the case of low fencing around playground or field areas, or as a "we-mean-business" method of keeping people out of restricted areas. *Your Fence —How to Choose It, How to Use It* is a 32-page book that illustrates 14 different types. Write Cyclone Fence, Dept. B-29, Waukegan, Ill.

Valves and Primers

597 Apco-V-Apco primers for centrifugal pumps; automatic power or tank primers, single or duplex units, dual-drive with gasoline engine; and 17 types of air-release valves for venting air or gases are made by the Valve and Primer Corp., 127 N. Dearborn St., Chicago, Ill.

Some Reasons For Break-Point Chlorination

598 Through the use of break-point chlorination in water treatment, odors, colors, and tastes are eliminated; iron and manganese are oxidized; the water is sterilized, and filters and mains are kept free from organic growth. Write for information to the Wallace & Tierman Co., Inc., Newark 1, N. J.

Economical Refuse Collection

599 The Dempster Dumpster consists of a truck-hoisting unit that handles a number of strategically placed containers having 8-cubic-yard capacities. The units are placed in spots where there is a heavy refuse load. When filled, they are picked up and dumped at a disposal area and a clean container is left in their place. Write for data to Dempster Brothers, Inc., 819 Dempster Bldg., Knoxville 17, Tenn.

One-Man Chain Saw With Bow Attachment

600 Henry Disston & Sons, Inc., 165 Tacony, Philadelphia 35, Pa., will send you literature describing its one-man chain saw with accessory bow attachments. This combination requires about 30 seconds to fell an 18-inch tree, and bucks and limbs cuts in less time than that. The saw is powered by a 3½-hp engine, and all the controls are operated by one hand.

Modern "Swimming Holes"

601 Wesley Bintz, Consulting Engineer, 301½ S. Washington Ave., Lansing 25, Mich., designs swimming pools that are constructed not only from a utilitarian standpoint but also to harmonize with the general surroundings. Other projects in which he specializes are park layouts, and memorial and community buildings.

(Continued on Page 28)

The NETCO CATCH BASIN CLEANER

With Pneumatic Controls

A Necessity For Every Municipality

- Simple
- Positive
- Powerful

PNEUMATIC BUCKET

Although it has large capacity, the Netco Bucket will operate through an opening as small as 16 inches. This Bucket will easily remove sticks, stones, bottles, wire, and other such debris from all catch basins.

These Cities and Many Others Own One or More

Netco Catch Basin Cleaners

Boston, Mass.
New York City, N. Y.
Indianapolis, Ind.
New Brunswick, N. J.
Harrison, N. J.
East Cleveland, Ohio
Binghamton, N. Y.

- **The Netco Catch Basin Cleaner can be mounted on any short wheel base truck having at least 8 ft. in back of cab. You can purchase unit separately and mount on your own chassis.**
- **The Netco Unit can be removed from truck and chassis in 30 minutes.**
- **The Netco can be operated continuously because the material removed from catch basins is loaded into other trucks. This unit will average 20 to 30 catch basins per 8 hour day.**
- **The Netco Bucket closes pneumatically, assuring positive and maximum digging efficiency.**
- **Positive and simple control of pneumatic bucket, boom swing, hoist clutch and boom brake by compressed air.**
- **The Bucket is lowered and raised by one cable. Only one hose is required to close it, and it is opened by powerful spring action.**
- **The Netco has a hoisting capacity up to 1500 lbs.**

For Complete Details Contact

NETCO DIVISION
CLARK-WILCOX COMPANY
118 Western Avenue
Boston 34, Massachusetts

For You — Free

Please Use Coupon on Page 21

Repairing Pipe Breaks With Sleeves

602 James B. Clow & Sons, 201-299 N. Talman Ave., P. O. Box 6600-A, Chicago 80, Ill., will send you data about its sleeves for repairing breaks up to eight inches in the barrel of a pipe, F-1200 Straight Split sleeve, and for repairing a break through a joint or reinforcing of a joint, F-1205 Bell Split sleeve.

Water Towers and Tanks To Your Specification

603 The R. D. Cole Mfg. Co., Newnan, Ga., is distributing a catalog, *Tank Talk*, which describes the company's design, manufacture, and erection of elevated tanks in capacities from 5,000 to 2,000,000 gallons; storage tanks for gases and liquids; all forms of steel-plate fabrication.

100-hp Diesel Engine On This Motor Grader

604 The J. D. Adams Mfg. Co., Indianapolis, Ind., is distributing a catalog describing its No. 610 motor grader, powered by a 100-hp. UD-16 International diesel engine, weighing from 25,200 to 27,000 pounds (depending on equipment), with over 18,000 pounds on the rear wheels. The No. 610 has combination mechanical-hydraulic steering, full-floating rear axle, 8 forward speeds with a high transport speed of over 25 mph, and a 12-foot blade 28 inches wide.

Revenue from These Waste Receptacles

605 One line of the waste receptacles manufactured by the Bennett Mfg. Co., Alden, N. Y., is equipped with frames for advertising cards—an easy way to augment municipal revenue. The company's products come with non-rusting stainless-steel feet. In addition there are six standard sizes available in olive and white finish, all designed for easy insertion and removal of refuse, and a line of rust-proof galvanized liners for the receptacles. Special types to suit your specifications are available. Ask for Catalog No. 548.

Solid or Intermittent Traffic Lines

606 Kelly-Creswell zone-marking machinery, hand-propelled, self-propelled, or truck-mounted, provide clean-cut lines by means of patented Air-Curtains—a mechanism for applying zone paint without a brush by directing exhaust gas or compressed air against the spray pattern. The cam-operated intermittent line mechanism applies broken lines automatically when desired. Write the Kelly-Creswell Co., Xenia, Ohio.

Water Conditioning Equipment

607 The Chemical Equipment Co., 1700 N. Main St., Los Angeles 54, Calif., has issued a bulletin describing its line of water and sewage-plant equipment: chlorinators, ammonators, filters, hydrochlorinators, main sterilizers, dry chemical feeders, and zeolite water softeners.

No Water Treatment Required

608 Through the use of a Ranney installation, not only is a large quantity of water obtained at low cost and economy of operation, but no treatment of the water is required. This mechanism consists of a reinforced concrete shaft 13 feet in inside diameter, which is sunk into the ground to a predetermined depth. The lower section of the shaft wall carries a series of port holes through which slotted screen pipes are projected horizontally into the water-bearing stratum. Write Ranney Water Installations, 811 West Seventh St., Los Angeles 14, Calif.

(Continued on Page 30)

Coating-Jobs

just don't come Too Big for Koppers!

Look at the 120-foot section of 66-inch steel pipe pictured above. It's only a *small fraction* of the new 10,000-foot intake pipe line of the Saginaw-Midland Water Project, Saginaw, Michigan. This entire pipe line, inside and out, has been protected against corrosion with Koppers Bitumastic* 70-B Enamel.

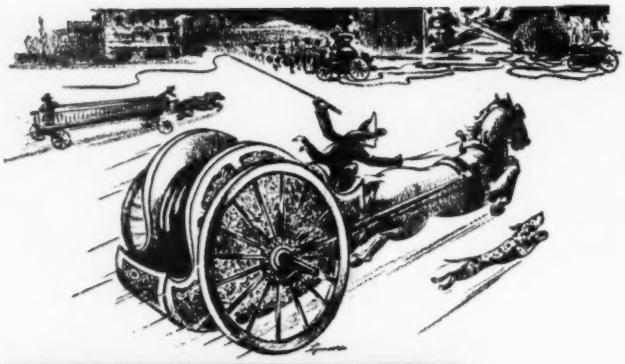
From start to finish, Koppers Contract Department handled this tremendous coating job. Some of the 40-foot joints weighed approximately 14 tons; yet Koppers skilled workmen, using specialized spinning equipment, easily coated the pipe's interior with a glass-smooth spun lining. Saginaw can now be certain that its pipe line will be protected against rust, corrosion and tuberculation . . . can be certain that the flow capacity will *remain* high.

Why not submit your corrosion problems to our Contract Department? Write us today.

*T.M. Reg. U.S. Pat. off.

KOPPERS **PROTECTIVE COATINGS**

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.



FIREFIGHTING TODAY IS DIFFERENT!

Shuredry

IS ON THE JOB

In the days of the horse-drawn hose cart, damage from smoke and water was often greater than the actual fire loss, but times and techniques . . . as well as equipment . . . have improved. Shuredry Green-Bak Salvage Covers are standard equipment for trained salvage crews who save fire victims millions of dollars each year in salvage of merchandise, furniture and fixtures.

FULTON Shuredry GREEN-BAK SALVAGE COVERS

they Top every test

Shuredry Green-Bak Salvage Covers top every test for water penetration and seepage. Pressure-impregnated with the exclusive Fulton *dry* treatment, Shuredry covers will not stiffen in cold weather or become tacky in heat. They're always fast to spread . . . easy to fold and carry.

Approved **Factory Mutual Laboratories and National Board of Fire Underwriters**

FIREMEN'S ASSOCIATIONS TEACH WITH SHUREDRY

Many progressive associations use Green-Bak Shuredry Covers to teach modern methods of salvage to smaller departments in their state.

On your next order to your fire equipment dealer specify Shuredry Green-Bak Salvage Covers.

FULTON BAG & COTTON MILLS

Manufacturers Since 1870

New Orleans · Atlanta · St. Louis · Dallas · Minneapolis · Kansas City, Kans. · Denver · New York

For You — Free

Please Use Coupon on Page 21

Two-Way Radio

609 The Belmont Radio Corp., 5943 W. Dickens Ave., Chicago 39, Ill., will send you information and literature on the new 2-way Raytheon Radiophone for any municipal fleet operation. The equipment is designed for 25-50 and for 152-162 mc. Write for literature describing its use in police cars, fire trucks, and other municipal vehicles.

Simplicity of Meter Structure Reduces Cost

610 The Buffalo water meter has a simple construction with few moving parts; result: low original and low maintenance costs. Literature describes the American meter, in bronze casing for soft or filtered water, and the Niagara meter, galvanized-iron casing for hard-water requirements. Write to the Buffalo Meter Co., 2902 Main St., Buffalo 14, N. Y.

Three Advantages To Submersible Pumps

611 Submersible pumps will not create a disturbance to near-by homes because it is a close-coupled motor pump unit completely submerged near the bottom of the well; there is no danger of contamination or interrupted service resulting from vandalism, and there is an appreciable reduction of the steel requirements and shaft and bearing difficulties. Write for the *BJ Submersible* booklet to Byron Jackson Co., Los Angeles 54, Calif.

No Sign Black-Out

612 Cataphote's bonderized, galvanized metal signs with glass reflector buttons in enameled steel signs, do not lose their effectiveness even in heavy storms. Write for a catalog that gives details of the company's signs and markers, street-name signs, sign posts, and danger signals to the Cataphote Corp., Toledo, Ohio.

Motorcycled Officers Reduce Accident Toll

613 One municipality established a record of almost three years without a traffic fatality following the acquisition of a motorcycled police group. Write for information about police motorcycles, Servi-Cars, and side-cars to the Harley-Davidson Motor Co., Milwaukee 1, Wis.

40% More Work From This Compressor

614 The new Jaeger 125-foot compressor is rated at accomplishing approximately 40% more work than the 105-foot machines. It can run two heavy breakers or 3 medium breakers at full pressure of 90 pounds. For information about this machine and other new sizes, write the Jaeger Machine Co., Columbus 16, Ohio.

Provide Soft Water For Home and Industry

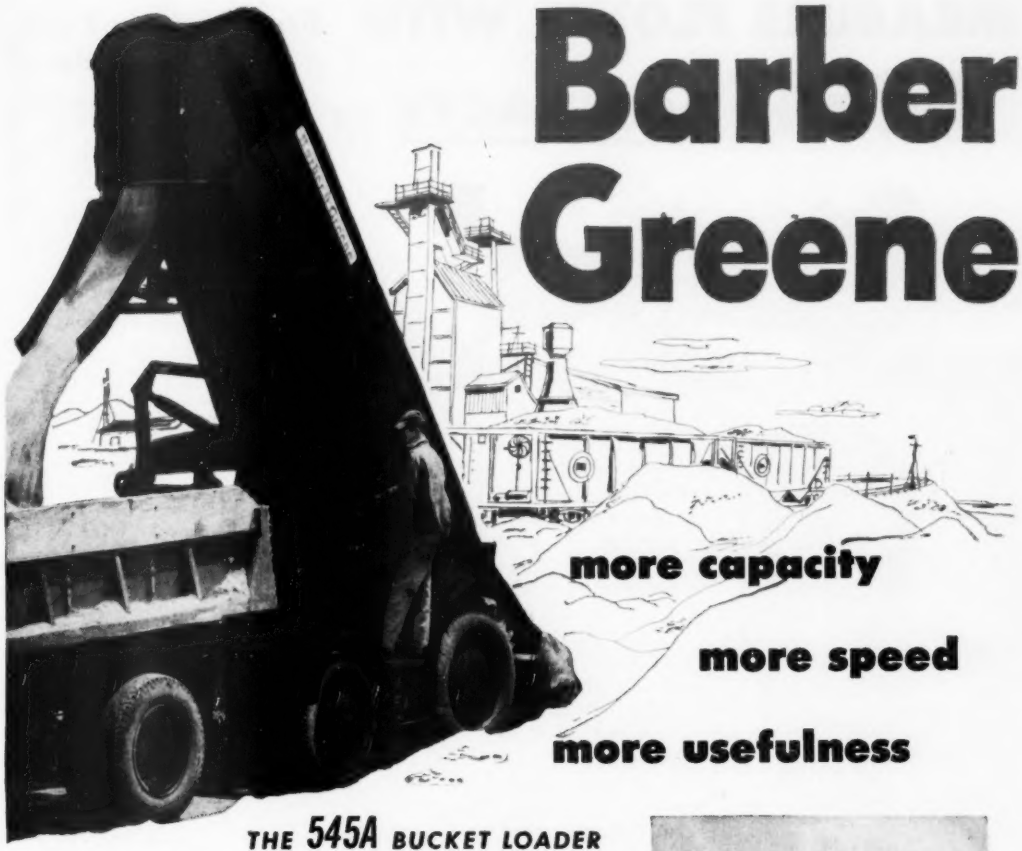
615 Soft water is not only appreciated by the housewife, but provides an inducement for industry to locate in your municipality. Write for information about one method of removing turbidity, iron, and other impurities to The Permutit Co., Dept. A-2, 330 West 42nd St., New York 18, N. Y.

There's An Elevated Storage Tank for Every Need

616 Elevated steel tanks for water storage should be selected not only to comply with capacity requirements, but also to receive the approbation of the citizens who have to look at them. Write for a comprehensive catalog from the Pittsburgh-Des Moines Steel Co., 3412 Neville Island, Pittsburgh, Pa.

(Continued on Page 32)

Barber Greene



more capacity

more speed

more usefulness

THE 545A BUCKET LOADER

Every feature in the rugged Barber-Greene Model 545A Bucket Loader helps you to get more yards moved per hour, more jobs done per day.

For instance: there are primary and secondary transmissions . . . a separate crowding clutch . . . three forward speeds . . . a quick reverse. The 8-foot synchronized spiral feed keeps the hard-lipped buckets filled to capacity. Double-wheel drive through big, heavy-duty tires means positive traction and extra power. And you'll like the three-point chassis mounting . . . the light-handed steering.

Ask your B-G distributor for the whole story . . . you'll want to put a Model 545A on *your* payroll.

FAST ON THE ROAD, TOO

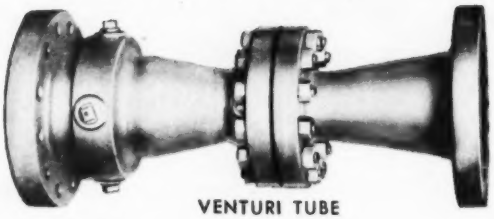
It's a great time-saver—fast on the road, fast on the job. Notice how the boom nestles horizontally for transport, and how it reduces overall height. Boom can be tilted onto saddle quickly and easily without using a wrench. Takes only a few minutes to get ready to move.

BARBER · GREENE COMPANY AURORA, ILLINOIS

Constant flow Equipment

LOADERS · PERMANENT CONVEYORS · PORTABLE CONVEYORS · COAL MACHINES · BITUMINOUS PLANTS · FINISHERS · DITCHERS

MEASURE FLOWS WITH GREAT ACCURACY!



VENTURI TUBE

MO METER

The correct design and careful workmanship of Simplex Venturi Tubes insure stable coefficients over wide velocity ranges, enabling the accompanying meter to measure flow with extreme accuracy. The high efficiency in the utilization of the differential pressure head is the result of more than 40 years of manufacture and research by this company.

Simplex Type MO Meters, when used in conjunction with Simplex Venturi Tubes as primary devices, guarantee the utmost accuracy in flow measurement over long ranges. They can be furnished to measure accurately over ranges of 20 to 1, 25 to 1, 28.5 to 1 or 32.5 to 1.

Where flow ranges are long, a single meter often will be sufficient where two or more ordinary instruments would otherwise be required.

For full information and bulletins, write to the Simplex Valve & Meter Company, 6789 Upland Street, Philadelphia 42, Pa.

SIMPLEX

VALVE AND METER COMPANY

For You — Free

Please Use Coupon on Page 21

Intense Mixing Eliminates Scum In Sewage Treatment

617 In a municipal sewage plant during a test of the Dorr digester equipped with a high-capacity circulating mixer, scum was allowed to build up for a period of one week to a height of one foot. After one hour of mixing, all scum disappeared; intermittent operation of the mixer maintained a homogeneous sludge mixture. Write for data to the Dorr Co., 570 Lexington Ave., New York 22, N. Y.

Every City Needs This Power Grader

618 The M-B power graders have a 40-hp gasoline or diesel engine to utilize to the full the work made simple by finger-tip hydraulic controls. Direct application of hydraulic power on the moldboard assures steady blade pressure at all times. Year round efficiency is achieved through easy mounting of the bulldozer blade, scarifier, power sweeper, and snow plow. Write for Bulletin 141 to the Meili-Blumberg Corp., Box 110, New Holstein, Wis.

Reasons For Good Street Lighting

619 One municipality gives three primary reasons for working hard toward good street lighting: inadequate lighting results in frequent traffic accidents, high insurance rates, and an unfair burden on police and fire departments and hospitals. Write for *A Planned Program for Better Street Lighting* to The Street and Traffic Safety Lighting Bureau, 155 E. 44th St., New York 17, N. Y.

Traffic Signs— The Language of Safety

620 Miro-Flex signs may be obtained of galvanized, bonderized steel, with baked-on enamel that assures long-lived protection against traffic accidents. The signs come plain, embossed, or reflectorized with glass or Stimsonite buttons, or Scotchlite. Write for a catalog to the Miro-Flex Co., Inc., 1821 E. 2nd St., Wichita, Kans.

Garbage or Refuse Incinerator

621 The Morse Boulger Destructor Co., 205 E. 42nd St., New York 17, N. Y., has issued an 8-page bulletin, No. 174, which describes the various types of Destructors and Kernerators for handling all kinds of wastes, garbage and refuse.

Keep Elevated Tanks Repaired

622 An overhead tank that is not in excellent condition is a menace to property and lives. Before the overhead storage tanks in your municipality reach a condition where there is a definite danger of collapsing, write the Dixie Tank & Bridge Co., 3523 Lamar Ave., P. O. Box 14, Memphis 1, Tenn., for information and literature describing its methods of repair and maintenance, and inspection and adjustment service.

4-Cycle Diesels to 1,370 Hp

623 Bulletin 161 from the Nordberg Mfg. Co., Milwaukee 7, Wis., describes the FS-9 and the FS-13 series—4-cycle diesel engines in 9- and 13-inch-cylinder sizes providing a power range from 150 to 1,370 hp. These engines may be used for self-contained portable power units, permanent installations, or auxiliary units.

Sewer Cleaner Adjusts from 8 to 30 Inches

624 In 30 seconds, the Expanding root cutter and sewer cleaner adjusts to fit any sewer from 8 to 30 inches in size, cleaning the sewer wall's top, bottom, and side. Write for a catalog to the Expanding Sewer Machine Co., 108 E. Walnut St., Nappanee, Ind.

Rx FOR A CITY'S GROWING PAINS

Every "Caterpillar" Diesel D7 Tractor is designed and built to carry superimposed loads. The D7 shown here, with Trackson Traxcavator and Hyster Hystaway, is ditching 8 miles of water main, 4 to 5 feet deep, on a city expansion program for Idaho Falls, Idaho.

Here's an earthmoving unit that helps a fast-growing town expand without the headache of heavy expenses.

The city of Idaho Falls, Idaho, uses its "Caterpillar" Diesel D7 Tractor, equipped with Traxcavator and Hystaway, for dozens of fast, economical jobs in connection with city expansion and maintenance.

The unit digs ditches, lays water mains and backfills; loads gravel into trucks; 'dozes earth where needed; digs trenches for garbage disposal, and serves as an efficient snow-removal tool on winter roads and streets.

Towns and cities across the continent are finding that a "Caterpillar" Diesel Tractor, with the tailor-made equipment designed expressly to work with it, is one of the most versatile and profitable units they can own. Your "Caterpillar" dealer will gladly give you full details.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

CATERPILLAR DIESEL

REG. U. S. PAT. OFF.

ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

A 30-YEAR OLD OPEN DUMP . . . becomes a modern Sanitary Fill AT RIVERSIDE, CALIFORNIA

Some 20 acres of burned garbage are being economically cleaned-up and buried by using the Drott Bullclam Shovel Method of Sanitary Fill.

• • •

AREA METHOD USED

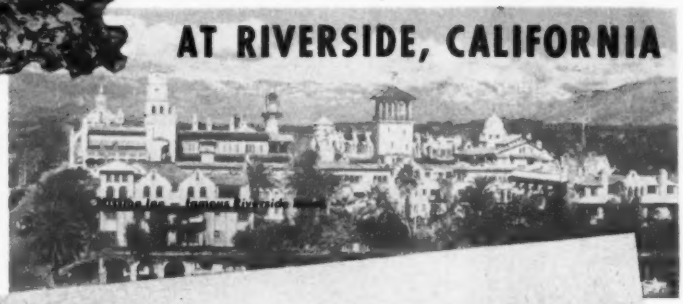
On this type of operation refuse is pushed or carried over a wide area and piled up into long mounds. It is compacted as placed, then covered with earth. Lower photo shows assembled refuse, top photo shows it after being covered.

Covering material is obtained from the cleaned-up area — some twenty feet back from the beginning of the accumulated refuse. By successive pushing or carrying, trenching and covering, a landscaped area is obtained, suitable for a park or playground.

Both old and current waste is handled. Refuse hauled in daily is dumped into the trenches from which the covering material is obtained.

• • •

Let us show you how easily and economically you can close your open dump. Get all the facts, NOW!



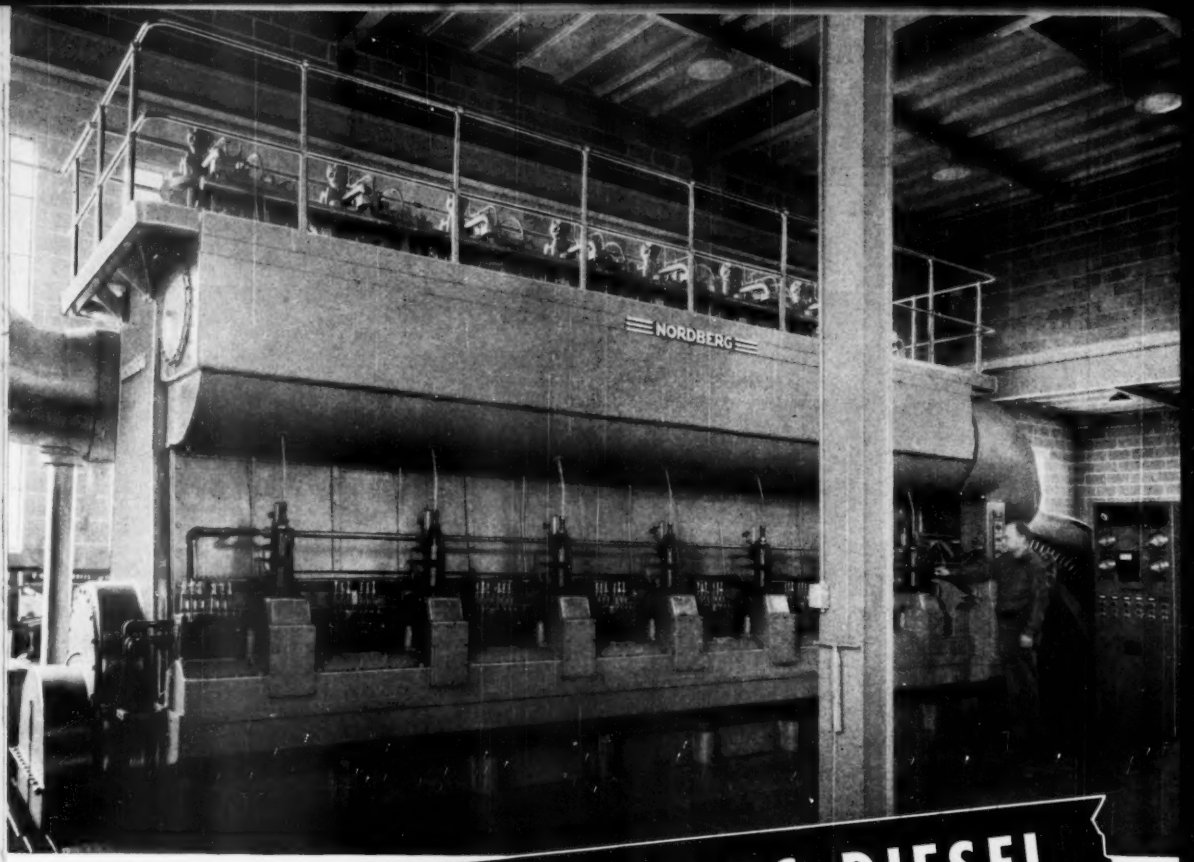
Operated by DROTT POSITIVE CLOSED HYDRAULIC SYSTEM • SMOOTH • QUICK • DEPENDABLE. Keeps dirt and air out . . . keeps oil in! Used successfully on Drott equipment for many years.

DROTT
UNIVERSAL
EQUIPMENT

FREE

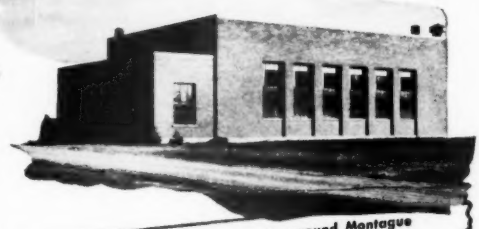
On request; descriptive catalog and list of cities using Drott method. Also cost data on collection and sanitary fill equipment.

DROTT MANUFACTURING CORP.
3841 W. WISCONSIN AVE. MILWAUKEE 8, WISCONSIN



2800 H.P. NORDBERG DIESEL

...for the Michigan Public Service Company



• The Michigan resort country around Montague is another in the ever-increasing list of areas served by Nordberg Diesel Engines. This 2800 B.H.P. unit was recently placed in service in one of the generating stations of the Michigan Public Service Company.

The basic dependability of Nordberg Diesels is no idle claim—*it's a fact,* proved in service on hundreds of successful power applications . . . from the smallest to the largest engine, every Nordberg unit is built to deliver low-cost, trouble-free power for main or standby service.

In the complete line of Nordberg two and four-cycle Diesel engines, including both oil and gas burning types, you will find exactly the right unit to meet your present and future power requirements . . . from 10 to 8500 B.H.P.

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN

P349

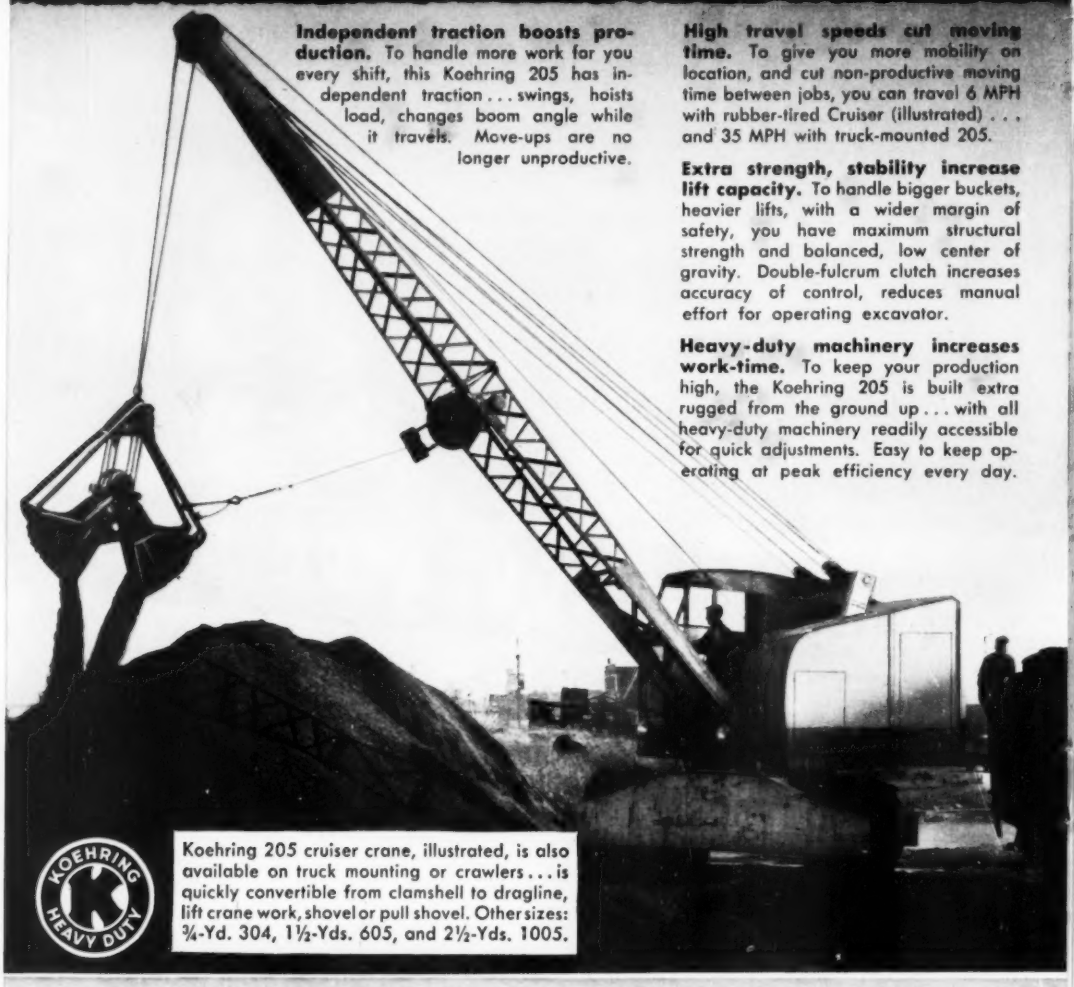
BUSCH-SULZER
A DIVISION OF NORDBERG

NORDBERG
DIESEL ENGINES

NORDBERG
MARINE

KOEHRING 205

½-YD. FAST-working... highly MOBILE



Independent traction boosts production. To handle more work for you every shift, this Koehring 205 has independent traction . . . swings, hoists load, changes boom angle while it travels. Move-ups are no longer unproductive.

High travel speeds cut moving time. To give you more mobility on location, and cut non-productive moving time between jobs, you can travel 6 MPH with rubber-tired Cruiser (illustrated) . . . and 35 MPH with truck-mounted 205.

Extra strength, stability increase lift capacity. To handle bigger buckets, heavier lifts, with a wider margin of safety, you have maximum structural strength and balanced, low center of gravity. Double-fulcrum clutch increases accuracy of control, reduces manual effort for operating excavator.

Heavy-duty machinery increases work-time. To keep your production high, the Koehring 205 is built extra rugged from the ground up . . . with all heavy-duty machinery readily accessible for quick adjustments. Easy to keep operating at peak efficiency every day.

KOEHRING HEAVY DUTY

Koehring 205 cruiser crane, illustrated, is also available on truck mounting or crawlers . . . is quickly convertible from clamshell to dragline, lift crane work, shovel or pull shovel. Other sizes: ¾-Yd. 304, 1½-Yds. 605, and 2½-Yds. 1005.

GET COMPLETE INFORMATION FROM YOUR KOEHRING DISTRIBUTOR

KOEHRING COMPANY

MILWAUKEE 10, WISCONSIN

Subsidiaries: JOHNSON • PARSONS • KWIK-MIX

*Trademe Reg. U. S. Pat. Off. CK821a

EXCAVATORS • DUMPTORS* • PAVERS • FINISHERS • MUD-JACKS* • MIXERS

Handy-KWIK-MIX *bituminous* MIXERS SET UP ANYWHERE

Here is a versatile, fast-batching bituminous mixer that fits any production problem. For loading trucks, handy tower attachment (illustrated) gives you extra high lift of 7'-9" or 8'-9", depending on model. Skip is power-operated . . . discharge at top is completely automatic. For quick portability, track folds back, legs telescope for ample travel clearance. Mixer can also be quickly mounted on raised platform for overhead batching. Or, for scattered patchwork, mobile, rubber-tired unit rolls anywhere. Its 7-second end-discharge, and non-tilting drum are ideal for direct pouring or for loading wheelbarrows. Available in 2 sizes: 10 and 14 cu. ft. For complete information see your Kwik-Mix distributor, or write for new illustrated catalog.

KWIK-MIX COMPANY
PORT WASHINGTON, WIS.
Koehring Subsidiary

Manufacturers of concrete, bituminous, plaster mortar mixers.

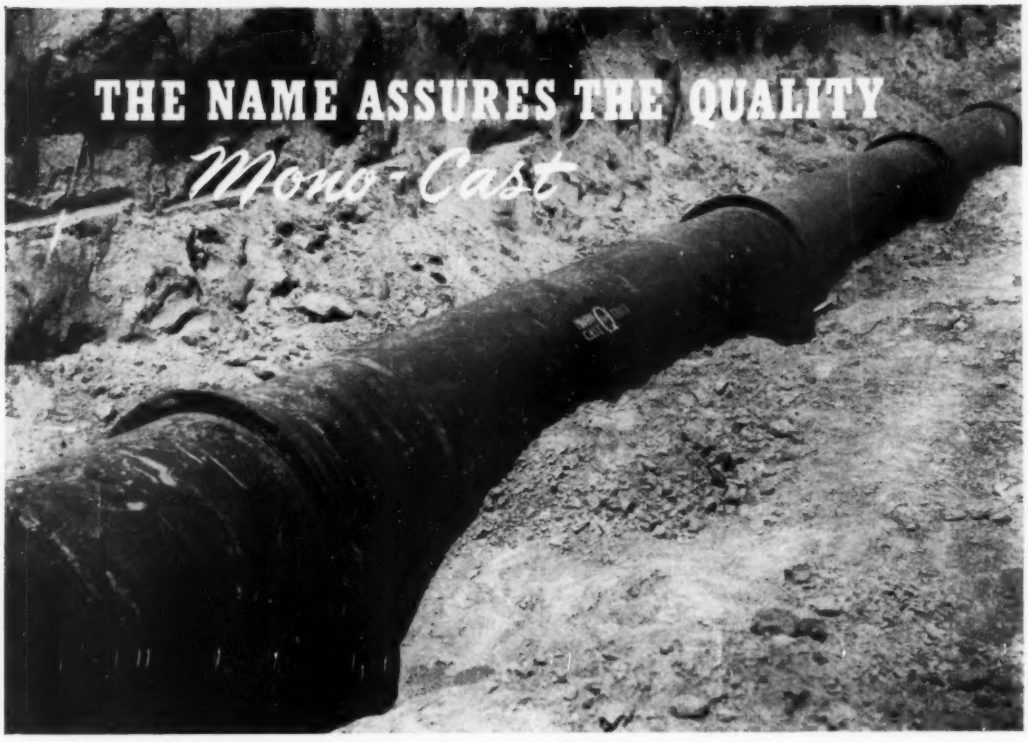
Rugged--250 *Trenchliner** SPEEDS CITY TRENCHING

With this heavy-duty Parsons 250 Trenchliner, you get plenty of flexibility to meet the special problems of city trenching. Efficiently trenches close to trees, poles, curbs, in narrow alleys, because digging boom shifts to either side . . . cuts within 12" of obstructions. Telescopic boom is easily changed for depth . . . digs over and under crosspipes . . . saves costly hand trimming. Digs up to 12½' deep . . . 16" to 42" wide. Arc-type conveyor discharges spoil on either side of machine. All operations are reversible. Maneuvers like a crawler tractor . . . turns completely around in its own length. Ask your Parsons distributor how it can save time, labor and costs for you . . . or write for bulletin. 4 other Trenchliner sizes are available.

*Trademark Reg. U. S. Pat. Off.

PARSONS COMPANY
NEWTON, IOWA
Koehring Subsidiary

Manufacturers of wheel and ladder-type Trenchliners



"Mono-Cast" is the trade name for Acipco pipe made by the centrifugal process. Made under rigid specifications in diameters 3" through 48", it is corrosion resistant, will stand the impact of heavy loads and gives complete job satisfaction. It can be supplied with joints for conveying water, gas, oil, sewage and other liquids. These joints and a full line of standard accessory fittings make it easy to install under varying service and laying conditions.

Being cast iron, Mono-Cast pipe enjoys an enviable reputation won by outstanding performance. It retains the high regard of engineers year after year, in city after city, because of its long life and trouble-free qualities. Whatever your piping problem, refer it to Acipco and rest assured of conscientious assistance from an organization backed by 44 years of experience in producing highest quality cast iron pipe and fittings.

Write for literature, stating the kind of joint in which you are interested. Address the Acipco office nearest you.

AMERICAN CAST IRON PIPE COMPANY

BIRMINGHAM 2, ALABAMA

Dallas	Houston	El Paso	Pittsburgh	Kansas City	New York City
Chicago	Minneapolis	Cleveland	Los Angeles	San Francisco	Seattle

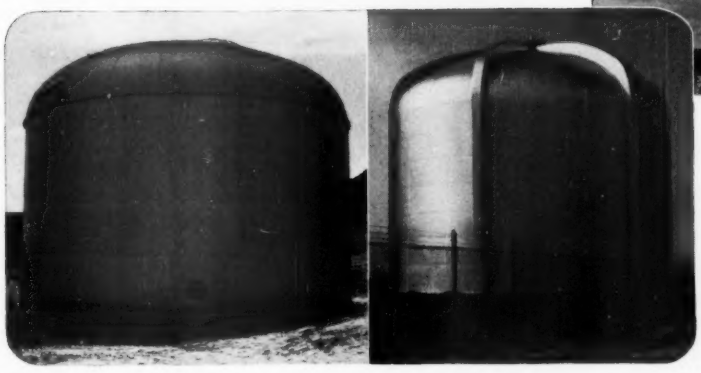
FOR ECONOMICAL

Water Storage

AT NATURAL ELEVATIONS

PITTSBURGH-DES MOI

Standpipes and Reservoirs



Sound, enduring performance, based on correct engineering, dependable fabrication and careful erection, assures complete satisfaction with Pittsburgh-Des Moines Steel Standpipes and Reservoirs.

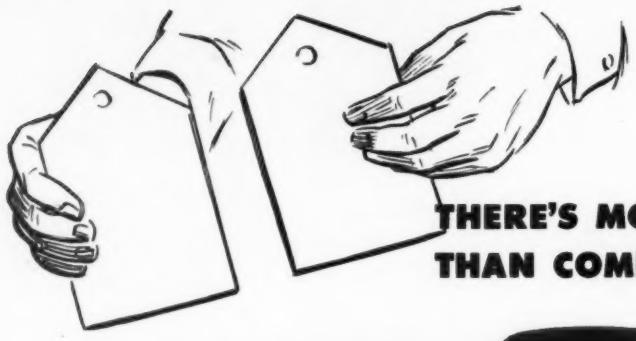
Over the years, their first-cost economy, low maintenance, and continued freedom from deterioration make these units an ideal water storage investment. *Write!*

PITTSBURGH • DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH . . . 3412 Neville Island
NEW YORK . . . Room 915, 270 Broadway
CHICAGO, 1216 First National Bank Bldg.
DES MOINES . 913 Tuttle Street
DALLAS . 1217 Praetorian Bldg.
SEATTLE . . . 920 Lane Street
SANTA CLARA, CAL. . 619 Alviso Road



THERE'S MORE TO BUYING THAN COMPARING PRICE TAGS

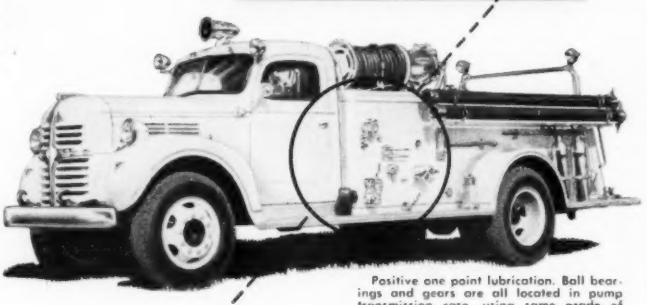
KARPARK
Automatics
THE KARPARK CORPORATION, CINCINNATI 6, OHIO

Dependability is what counts—in parking meters. Compare the extra strength, the precision construction of the KARPARK "SUPERIOR". Note the reasons for its exact accuracy; its day in and day out performance; its extremely low maintenance cost; its fool-proof automatic operation. Write, today, for all the facts and choose for true economy.

KARPARKS ARE MANUFACTURED BY THE HERSCHEDE HALL CLOCK CO.

THE ONLY TWO STAGE PUMP WITH 3 STAGE PERFORMANCE

Barton-American
DUPLEX MULTI-STAGE
Centrifugal Fire Pump



Two independent pumps driven by individual gear trains — breakdown of one still leaves one in operation — makes possible three operating characteristics.

1. Large capacities at normal pressures delivered through the capacity pump only.
2. Normal high pressures delivered through the high pressure pump only.
3. Pressures as high as 400 pounds are delivered with both pumps operating in series and at LOW engine speed.

The Barton-American Duplex-Multistage is the ONLY fire pump that has three distinct and separate operating characteristics, yet has only TWO impellers.

Positive one point lubrication. Ball bearings and gears are all located in pump transmission case, using same grade of oil as truck engine. No grease cups to be overlooked — no water lubricated bearings to run dry and fail.

Delivers 400 pounds pressure for fog gun service.

AMERICAN-MARSH PUMPS
BATTLE CREEK MICHIGAN U.S.A.

Pumps and Only Pumps Since 1873

SINK PIPE HANDLING COSTS THE EASY HYDROCRANE WAY

That's just what is being done in this Mid-west city with a Bucyrus-Erie Hydrocrane. This fast working machine has not only cut down man power requirements, but also quickened pipe work all along the line. Previously a slow and laborious wood horse and chain-fall hook-up was used to lower pipe — an expensive and time consuming process.

NOW LOOK AT THIS *Speed-up*

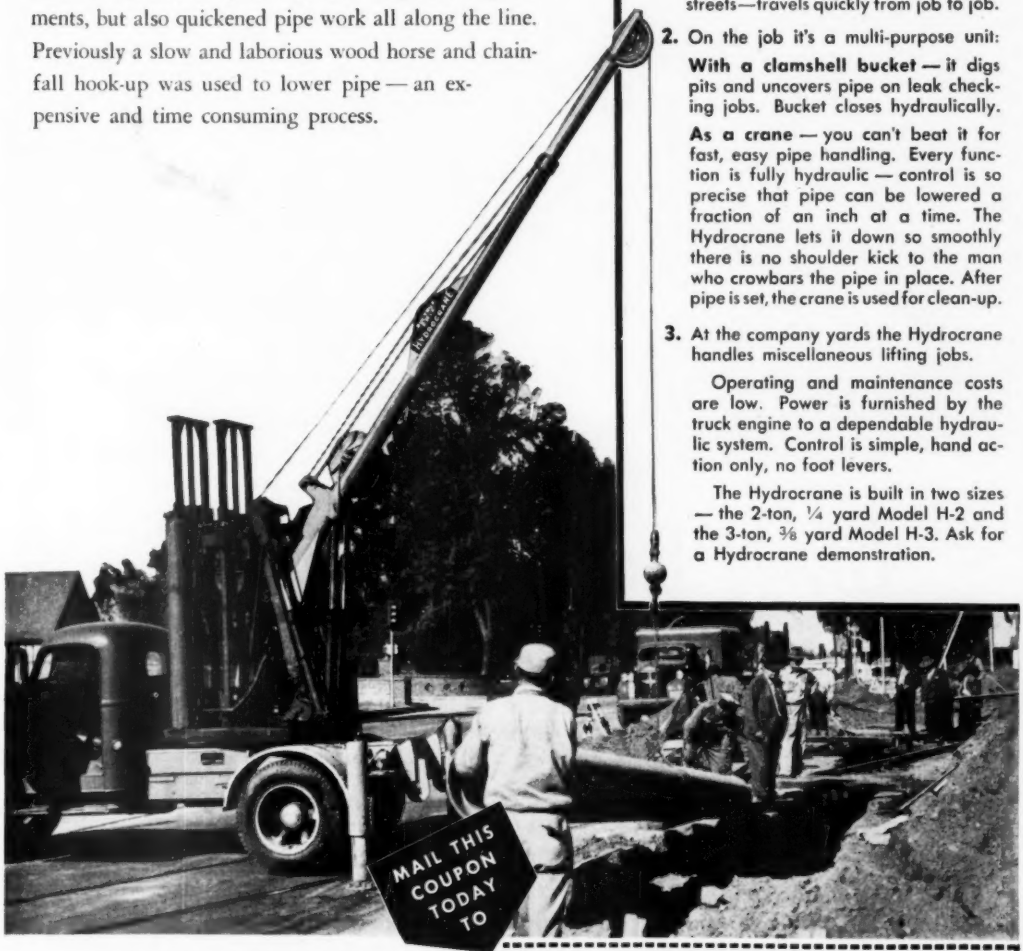
1. Truck mounted, the mobile Hydrocrane moves easily through congested city streets—travels quickly from job to job.
2. On the job it's a multi-purpose unit:

   With a clamshell bucket — it digs pits and uncovers pipe on leak checking jobs. Bucket closes hydraulically.

   As a crane — you can't beat it for fast, easy pipe handling. Every function is fully hydraulic — control is so precise that pipe can be lowered a fraction of an inch at a time. The Hydrocrane lets it down so smoothly there is no shoulder kick to the man who crowbars the pipe in place. After pipe is set, the crane is used for clean-up.
3. At the company yards the Hydrocrane handles miscellaneous lifting jobs.

Operating and maintenance costs are low. Power is furnished by the truck engine to a dependable hydraulic system. Control is simple, hand action only, no foot levers.

The Hydrocrane is built in two sizes — the 2-ton, ¼ yard Model H-2 and the 3-ton, ⅜ yard Model H-3. Ask for a Hydrocrane demonstration.



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Substantial savings in excavation costs are often possible with Transite* Sewer Pipe because of its high flow capacity. This often permits the use of flatter grades and shallower trenches. This is a particularly important advantage where the pipe must be laid at or below the ground water line or where rock excavation is involved.

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Transite's long 13-foot lengths and light weight lower handling costs. And because there are fewer joints to assemble in the finished line, installation is faster, and more economical.

As a further economy, Transite's sleeve-type joints guard effectively against infiltration. This helps reduce the load on the treatment plant. Therefore, treatment costs are kept to a minimum—plant capacity is conserved for the increased loads incident to community growth.

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For all the facts about Transite, send for brochure TR-21A. Address Johns-Manville, Box 290, New York 16, N. Y.

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TRANSITE SEWER PIPE...

Your costs come down with *DISSTON*

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The Disston One-Man Chain Saw is dependable—light to handle and husky—has long life, anti-friction bearings and positive lubrication. Easily started in any weather. Easily, safely controlled, even when cutting at awkward angles and upside down! Never has modern power taken such a big bite out of the cost of cutting timber and lumber. A demonstration proves it.

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This 12 hp. husky does tough jobs double-quick. The right saw for heavy work. Pivoted blade swings 360°—for handy cutting at all angles.

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Quality
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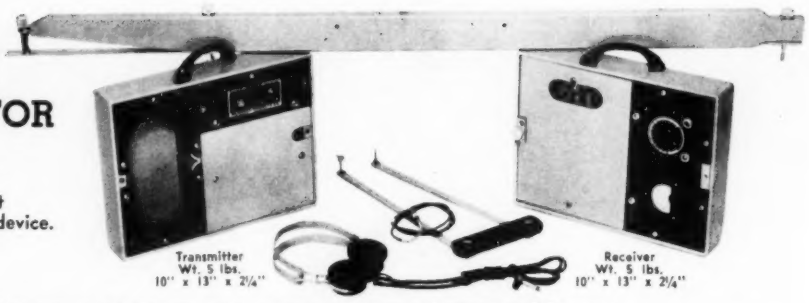

Originators of the Quality, light, compact, all-purpose Underground Locator

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All Sizes All Types

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JOB TESTED ENGINEERING. Rugged construction, ample flotation and adequate safety features typify all models of MARTIN TRAILERS.

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At your request let us send you detailed specifications and prices.

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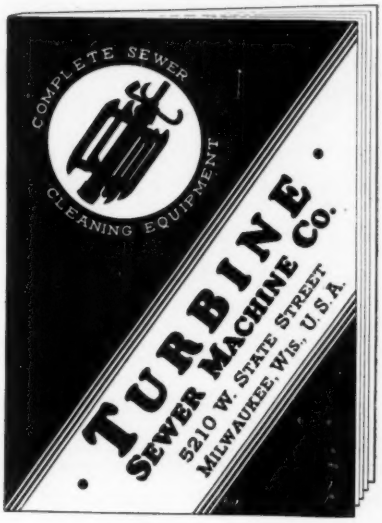
7 Power Sewer Cleaning Units *Offered by* TURBINE

Write for this catalog and get Maxi-Power specifications.



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ELECTRIC PRE-HEATER

Quick, easy starts regardless of weather

The KIM Hotstart is particularly valuable in cold or cool weather, but its installation is worthwhile at all times, particularly on engines in vehicles being used on short run or start and stop work. If you operate mobile or stationary engines of any kind—Diesel or Gas—a KIM Hotstart will pay handsome dividends. Literature on request.

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KIM Hotstart Mfg. Co.
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Please send literature, prices and name of local dealer.

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Cut Your Patching Costs

Heated plate impacts, finishes and cures hot or cold materials — ready for traffic.

No roller, no water, no waiting.

Completes 60 to 80 sq. ft. per minute. Works flush to curbs, rails, manholes.

GREATER DENSITY THAN WITH A 10-TON ROLLER YET WEIGHS ONLY 230 LBS.

Fast—60 to 80 Sq. Ft. a minute

Works where a roller can't

Because it works by *impaction* — hitting 1700 to 2000 blows per minute of more than 700 foot pounds impact with its heated plate — the Wayer Impactor puts down pavement patches winter or summer, smoothly finished, thoroly cured, sealed tight and ready for immediate use.

Any bituminous material or dry concrete base for patching roads, streets, parking lots, etc., paving walks and floors. Also tamps earth. Easily portable. Big cost saving. Send for Bulletin 25-8.

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FOR MUNICIPALITIES

HAND storage batteries are heavy-duty batteries provided with heavy, hand-pasted tank-formed plates, heavy glass mats, acid and heat resisting micro-porous rubber separators, splash decks and genuine hard rubber containers. Built for use in Police Radio cars, Sanitation trucks, snow plows, sweepers, emergency trucks, ambulances, and fire apparatus.

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OK CHAMPION POWER SEWER CLEANER

DON'T LOSE Sewer Capacity

Clear your sewer lines regularly. Keep up full carrying capacity and you save money—in lower maintenance cost and avoiding costly backwash. Order OK Champion Power Sewer Cleaner equipment and your men remove roots, dirt and other obstructions from any storm or sanitary sewer in ONE operation. All men work above street level.

OK Champion cleaners are regularly clearing sewers all over the world. New improvements make them better than ever. Send for literature.

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Please send information on how the Improved OK Champion Power Sewer Cleaner cuts sewer cleaning costs.

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- DOLGE SS WEED--KILLER goes to the root of your weed problem. Use *where no vegetation whatever* is desired. Sterilizes the soil so windblown seeds cannot normally sprout. Penetrates to the roots—and KILLS!
- E.W.T. SELECTIVE WEED-KILLER (2-4-D) works down thoroughly to the roots of dandelions, poison ivy, ragweed, and other plant pests, but will *not* kill most turf grasses. *Write for literature.*

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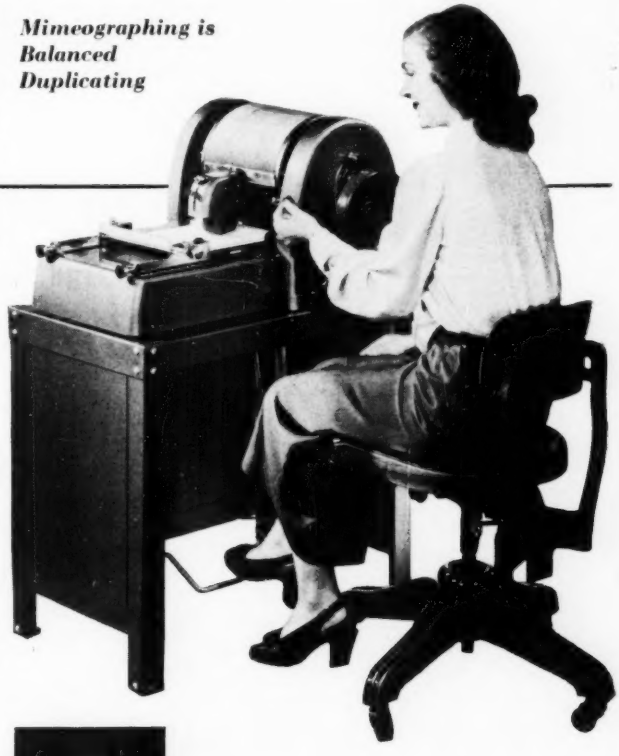

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Available at extra cost. Simplifies hand feeding collated sets of irregular sizes of paper and card stocks.

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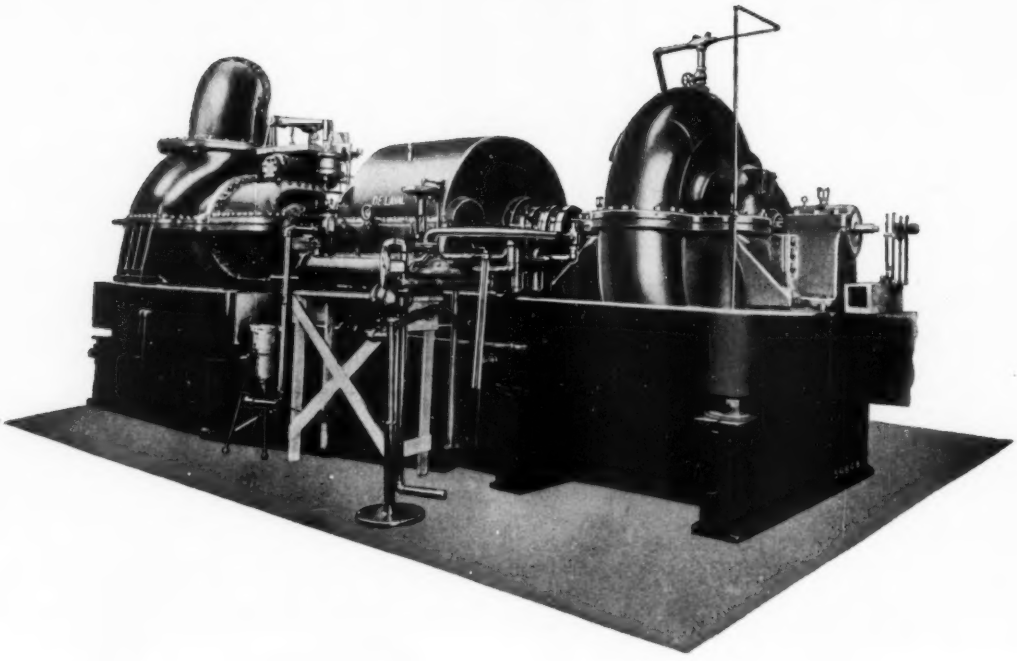

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Within the last twenty-seven years the City of Chicago has installed De Laval pumping units having a combined capacity of one billion, two hundred and forty-five million gallons daily. The latest of these is a De Laval 75 mgd pump driven by a De Laval turbine employed to provide maximum economy at varying rates of delivery.

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Since you're the man most concerned by that steadily rising curve labeled "operating costs," you're constantly searching for machines and methods that will help reduce expenses.

That's why Remington Rand now invites you to see the new "Foremost" bookkeeping machine in action.

New from core to keyboard, this completely electrified machine produces *all* your accounting records with new efficiency. New mechanical features speed every machine operation... new functional design simplifies each operator motion. RESULT: your accounts receivable, payrolls and accounts payable are turned out faster—with less effort—at lower cost.

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"Seattle's Finest" *rely on* HARLEY-DAVIDSONS *Exclusively!*

Shown is a squadron of 26 of the 60 Harley-Davidson Police Motorcycles operated by Seattle under the direction of Captain R. V. Shaugnessy.

60 Harley-Davidsons help Police control heavy traffic in great West Coast seaport

SEATTLE, busy gateway to the Far East and Alaska, has always contended with heavy traffic and crowded thoroughfares. And always its fine police force has met traffic problems with dispatch and sureness, thanks to efficient methods and organization . . . and to the help of efficient Harley-Davidson Police Motorcycles. Ever since 1931, the department has relied on Harley-Davidsons exclusively to extend the use of police manpower, in various duties — and to prevent traffic congestion and accidents. Today, the traffic squad, under Capt. R. V. Shaugnessy is equipped with 60 modern Harley-Davidson motorcycles, including a fleet of 24 Servi-Cars.

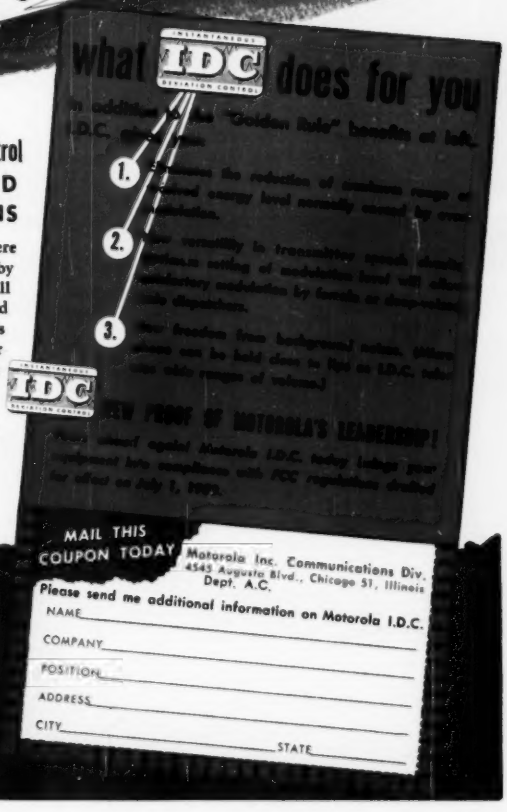
Ever-mounting automobile and truck registrations are creating heavy traffic and increasing accident rates in cities everywhere. Prevention of fatalities and injuries has become of paramount importance to all police departments. If your department does not have the advantage of Harley-Davidson Police Motorcycles, Servi-Cars and sidecars, phone your Harley-Davidson dealer today. He will be glad to tell you about the proved effectiveness and versatility of these motorcycles for police work.

HARLEY-DAVIDSON MOTOR COMPANY, Milwaukee 1, Wisconsin

HARLEY-DAVIDSON

MOTORCYCLES POLICE BETTER TRAFFIC CONTROL *SERVI-CARS*

what *Motorola's* "GOOD NEIGHBOR POLICY" means to you...



Motorola I.D.C. —Instantaneous Deviation Control

ANOTHER MILESTONE ALONG THE ROAD TOWARD ADJACENT CHANNEL OPERATIONS

Motorola Instantaneous Deviation control eliminates the severe nuisance interference that develops from channel "spill-over" by means of a new slope limiting device now an integral part of all currently manufactured Motorola transmitters. I.D.C., applied universally, will make close channel occupancy practicable. It is an ***absolute solution***—not a conventional compressor amplifier or clipper-limiter compromise. Motorola's I.D.C. requires no "attack time," but controls carrier excursions instantly.

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If your community needs parking lots—and what community doesn't these days—put versatile International Power to work for you—the cheapest, surest way of getting the job done. International tractors and International-powered equipment are the cost-cutting, efficient machines for doing this work. Make sure the powered equipment you buy is powered by an International Engine if you want maximun dependability and economical operation.

Your International Industrial Power Distributor is the man to see for construction and industrial equipment. His sales and service facilities are of great benefit to municipalities that need a lot of work done at minimun cost.

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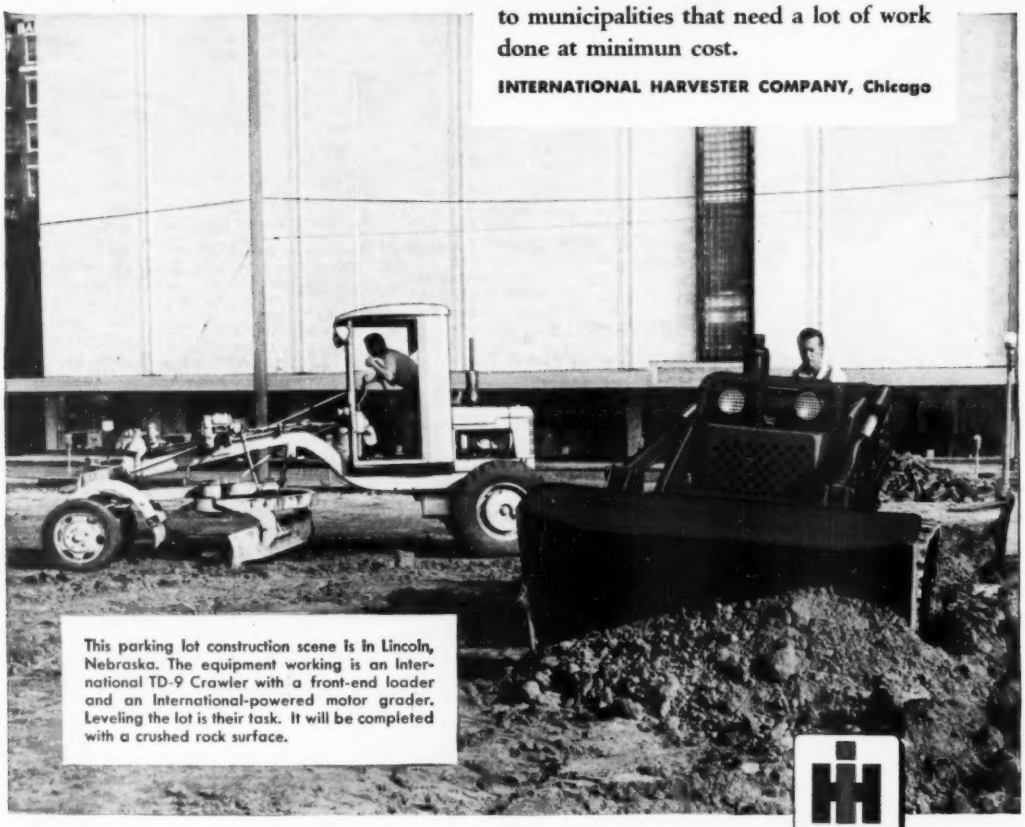

This parking lot construction scene is in Lincoln, Nebraska. The equipment working is an International TD-9 Crawler with a front-end loader and an International-powered motor grader. Leveling the lot is their task. It will be completed with a crushed rock surface.

Hear James Melton on "Harvest of Stars" every Wednesday evening, CBS

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WHEEL TRACTORS
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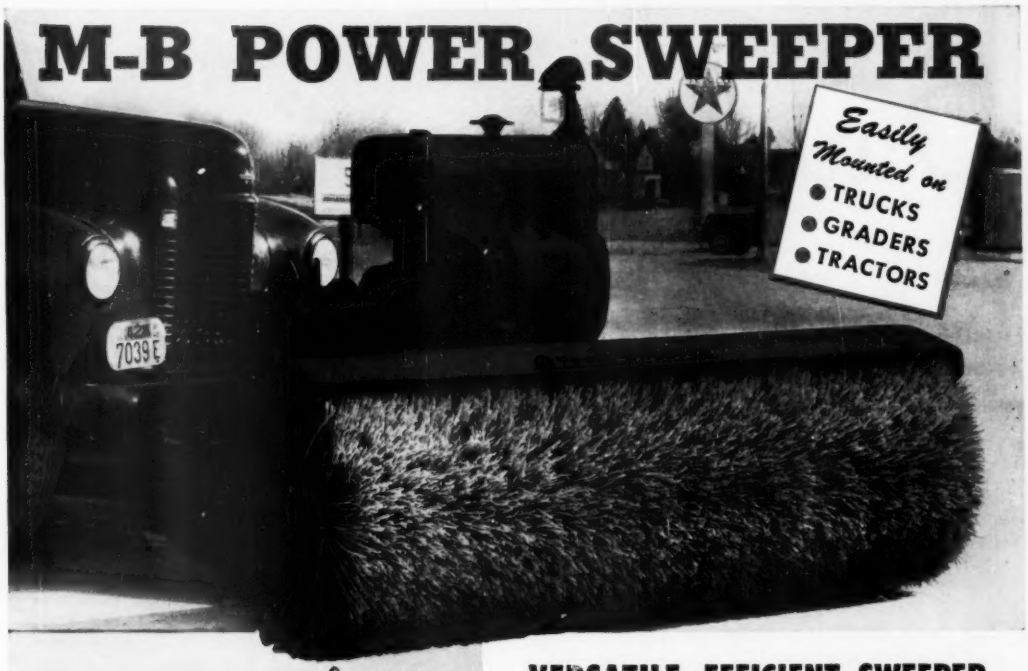
POWER UNITS

INTERNATIONAL INDUSTRIAL POWER

M-B POWER SWEEPER



M-B UNDERCARRIAGE WITH POWER SWEEPER

Sturdy, adjustable Undercarriage for attaching Power Sweeper or other equipment on standard-type trucks.

MODEL 1-S POWER SWEEPER ATTACHED TO MOTOR TRUCK

VERSATILE, EFFICIENT SWEEPER For YEAR 'ROUND SERVICE . . .

The M-B Power Sweeper quickly attaches to any truck equipped with adjustable M-B Undercarriage ...also to graders, maintainers or tractors equipped with mounting plate. It's the ideal year 'round Sweeper for cleaning city streets, sweeping county roads, cleaning surfaces before paving and removing snow. Controlled 3-way sweeping action — 30° to right, 30° to left or straight ahead. Automatic clutch and hydraulic control at operator's seat for raising and lowering brush for proper sweeping pressure. Independent Wisconsin VE-4 Engine powers 8 foot Palmyra fibre or steel brush. Removable metal hood assures clear vision and protects operator. Write for Bulletin No. 139.

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Ideal for striping streets, parking areas, airports, playgrounds, industrial plants, etc. Rugged, compact construction. Hand or self-propelled models. M-B Markers are versatile to operate . . . have a large capacity . . . provide fast, low-cost striping.

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Sturdily constructed with all-steel welded frames and Tilt-Bed platforms for easy loading. Designed for hauling various types of tractors with attachments, rollers, tampers, shovels, graders, ditchers, air compressors, etc. Sizes 2½ to 10 tons.

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Lightweight Maintainer engineered for heavy duty maintenance work. For contractors, towns, cities and highway departments. Attachments such as cab, scarifier, power sweeper, snow plow, bulldozer blade, and leaning wheels, available.

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Badger Meters solve city's water supply and financial problems

This city's demands for water were expanding. Two wells and the pumping facilities appeared inadequate. No overhead reservoir was available. Financing a third well and pumps was impractical. Water wastage (before installing Badger Meters) seemed excessive. The city decided to try metering as a means of reducing waste. Result: after metering, 24-hour flow was reduced over 55%. No new well needed. The water supply problem was solved . . . so was the financing problem! You, too, will find "It pays to BUY BADGER".

NEW! Badger Chart No. 695 (Practical plan for a small meter repair shop). WRITE today for this chart — no charge or obligation.

BADGER METER MFG. CO., MILWAUKEE 10, WIS.

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You will find a Badger Meter size and type for every waterworks service. Shown here are Model SC-IOT (for warm climates), and Model A-IOT (for cold climates) . . . sizes ⅝" to 1¼" . . . other models in sizes up to 12". Write for complete information and prices.

BADGER Water METERS

ACCURACY · LOW-COST MAINTENANCE · DURABILITY · SENSITIVENESS

32 MACK PUMPERS FOR CHICAGO!

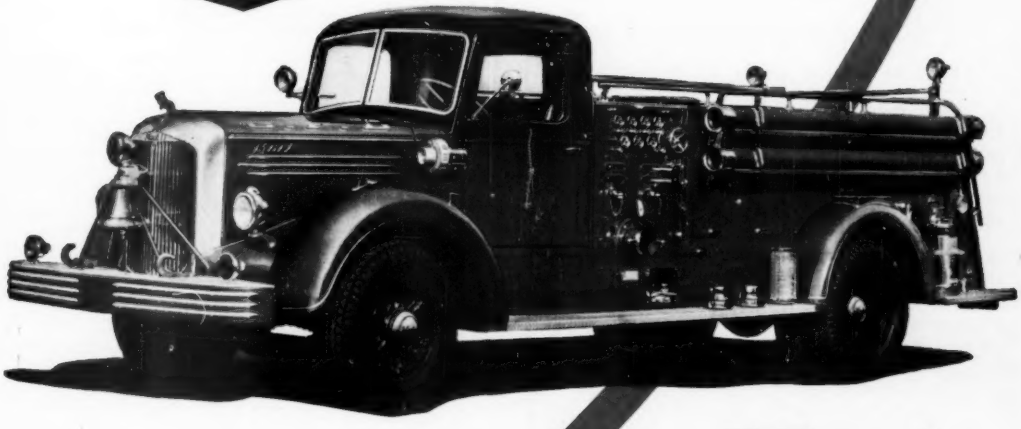
Mack Completes Year's Largest Delivery

Here's the first of thirty-two Mack Type 95, 1000-gallon pressure-volume centrifugal pumpers to be delivered to the city of Chicago . . . the largest single-order delivery of fire apparatus in 1948-1949.

Look to the leader to set the pace!

Mack leadership is based on qualities that count: *Power a-plenty*, for fast starts, quick runs, and great pumping capacity at moderate engine speeds. *Bred-in-the-bone dependability*, assuring faithful response and full-time protection. *Bulldog stamina*, that keeps peak efficiency under long, hard usage. And *near-at-hand service*, ready to maintain Mack performance through a nation-wide network of 67 factory branches and over 600 dealers.

These are some of the reasons why progressive departments from coast to coast regard Macks as the finest in fire apparatus. Good reasons, too, why you'll get pace-setting performance — whatever your requirements — when you *Modernize with Macks.*



Mack

FIRE APPARATUS

Mack Manufacturing Corporation
FIRE APPARATUS DIVISION
Long Island City 1, New York

Factory branches and dealers for parts and service in all principal cities. In Canada: Mack Trucks of Canada

7334

TRIPLE COMBINATION PUMPERS . . . 500 TO 2000 GALLONS . . . SQUAD WAGONS . . . CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

HOLD EVERYTHING!
SEE THE NEWEST AND BEST
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PERMANENT ALUMINUM STREET SIGNS
LOW COST NO MAINTENANCE
VISIBLE DAY & NIGHT
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LAKE SHORE MARKERS
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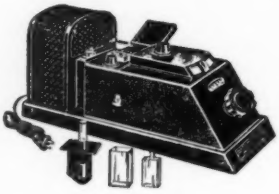
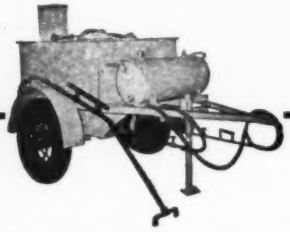
KLETT SUMMERSON
ELECTRIC PHOTOMETER
Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street New York, N. Y.



White Heating Kettles Have Fire-Proof Tops

Cut-back and other highly inflammable material used in street and road repairs can be heated with full safety in White kettles. FIRE-PROOF top reduces fire hazard.

White asphalt and tar kettles are extensively used. They are highly satisfactory and give long life.

Furnished as plain kettles, or with hand or engine-driven spray pumps for patching all kinds of pavement. Can be supplied with thermometer, barrel hoist, warming hood. All oil burning. Mounted on semi-elliptic springs and pneumatic tires. 65, 110, 165, 220, 300 gallon capacities. Detachable fuel tanks.

Model F-10 is oil jacketed for safely heating elastic joint and crack filler.

Write for catalog

Elkhart White Mfg. Co. Indiana

AQUA VALVE BOX LOCATOR
Master of the Toughest Location Problems!
Finds hidden boxes in half the time. Instant top-view reading, no stooping. Guaranteed in snow, ice, any paving!

$29.50
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Complete with leather case and strap.

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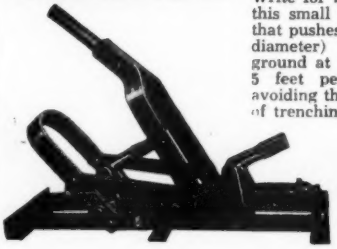
Survey & Instrument Co.
2513 LESLIE AVE., NORWOOD
CINCINNATI 12, OHIO

GIANT
Reduce Pipe-Laying Costs with a GIANT Pipe Pusher



Write for booklet telling of this small inexpensive tool that pushes pipe (up to 15" diameter) through the ground at the rate of 1 to 5 feet per minute, thus avoiding the heavy expense of trenching.

Address Dept. P
GIANT MFG. CO.
Council Bluffs, Ia.

"Stay out of here folks.... this hot stove will fry you!"

WHEN the first gas range, with its promise of a cool kitchen, was exhibited at the Philadelphia Centennial Exposition in 1876, little did its sponsor dream of a market of 21,000,000 homes. For that is the extraordinary number of residential customers now served by gas for cooking, refrigeration, or home heating.

Water supply and sanitation also made extraordinary progress in the half-century since 1899, the year our Company was established. Today, 12,000 water works furnish 85 million people with a dependable supply of safe, palatable water. Over 5,000 sewage treatment plants contribute to the health of the nation.

In these three progressive branches of public service—gas, water supply and sanitation—are customers who have been buying pipe from us for 50 years. They know that we, also, have made signal progress, from decade to decade, in developing and perfecting better methods for the production of better pipe.

To those responsible for the great progress in water supply, gas and sanitation service and their contribution to better health and living over the past fifty years, America pays tribute.

U.S.
CAST IRON
PIPE

1899-1949
U. S. Pipe & Foundry Co.
Makers for 50 years of cast iron pipe for water, gas and sewerage service.
General Offices: Burlington, N. J.

7 REASONS

Why more than 4,500 Communities use
AUTOMATIC VOTING MACHINES

Absolute Secrecy

•

No Spoiled Ballots

•

An Accurate Count

No Expensive Recounts

•

Reduced Election Costs

•

Immediate Returns

• Easy and Speedy Voting •

LET US SHOW YOU HOW YOUR COMMUNITY MAY ENJOY
THESE ADVANTAGES —— WRITE

AUTOMATIC VOTING MACHINE CORP.
JAMESTOWN, NEW YORK

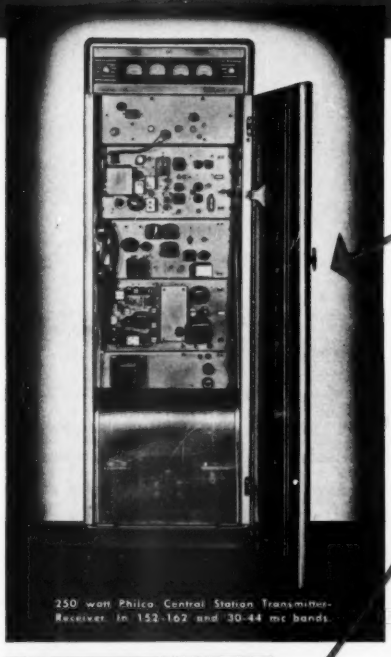
— Since 1898 —

LOWER COSTS . . . SPEED SERVICE . . . INCREASE EFFICIENCY

PHILCO

Advanced FM Radiophone

MOBILE COMMUNICATIONS



250 watt Philco Central Station Transmitter-Receiver. In 152-162 and 30-44 mc bands.

Philco Individualized Radiophone Systems bring you fundamental advances in FM Communication through patented and exclusive Philco engineering developments . . . the sharpest, clearest, most easily understandable "talk out" and "talk back" communication in the industry . . . tailored to your needs and your working conditions . . . and built to highest standards of quality by Philco, the leader in radio for 18 years.

PHILCO SERVICE IS NATIONWIDE

Without obligation, Philco Engineering Consultation Service helps you in planning large or small installations, determining a basic system, preparing FCC forms . . . and, once you install Philco, fully adequate nationwide facilities provide the most complete "After You Buy" Service in the industry.

COMPLETE COMMUNICATIONS SYSTEMS

Philco provides complete communications systems. Central station equipment in both bands with both high and low power ratings; matching mobile equipment. Remote control units and monitors. Accessories. Test equipment. Antenna systems.

Philco Mobile Transmitter-Receiver. Convenient desk-drawer type for quicker servicing. Both bands.

MAIL THIS COUPON TODAY

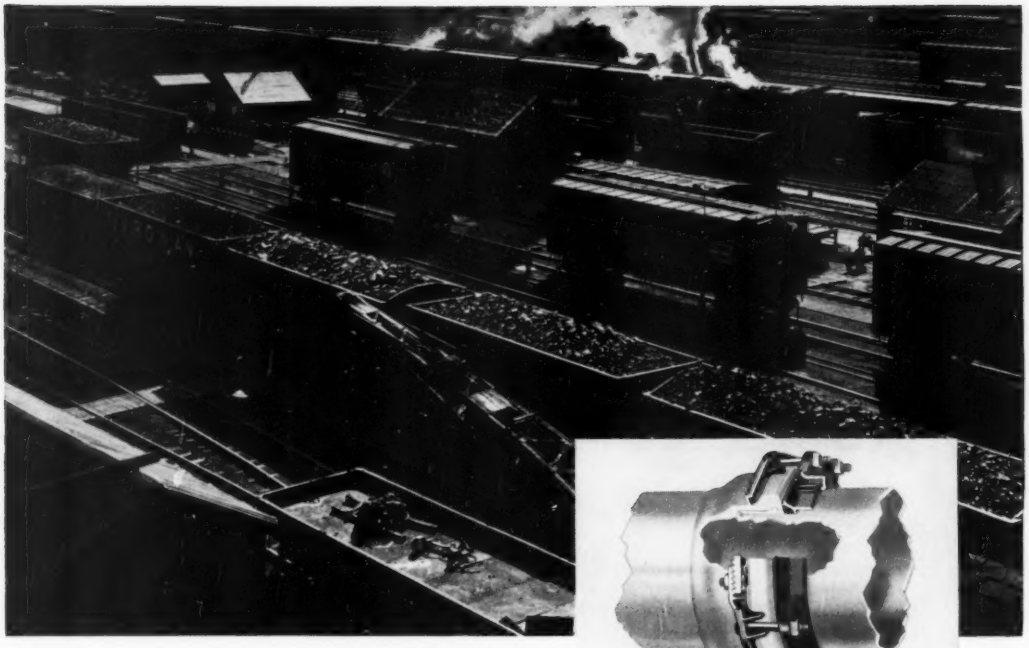
Industrial Division, Dept. AA3,
Philco Corporation, Philadelphia 34, Pa.

Please send information on
Philco Communications Systems.

NAME ..... TITLE .....

ADDRESS .....

CITY ..... STATE .....



VIBRATION!

But water lines stay bottle-tight

Here in the Russell, Kentucky, yards of the Chesapeake and Ohio Railway, water lines are undisturbed by terrific pounding because they are protected by Dresser Bell-Joint Clamps.

C & O's Chief Engineer writes:

"The use of Dresser Style 60 Bell-Joint Clamps has been standard on our railroad for the past fifteen years. They can be found in any of our yards."

Or take the case of Buffalo, where the water department used to keep two repair gangs busy every day of the week repairing leaks in the railroad yards. Buffalo finally clamped these lines and reported a year later, "not a single leak since we clamped".

These two examples indicate the ability of Dresser Style 60 Clamps to hold joints tight—even under the most difficult operating conditions. Today, when water consumption and operating costs are both at peak levels, you'll find it more practical than ever to use Dresser Clamps for all your repair work on leaking bell-and-spigot joints or as a precautionary measure where excessive vibration can be anticipated.

Completely adjustable, they can be quickly and easily installed without service interruptions even on foreign pipe or otherwise off-size bells and spigots.

Dresser Style 60 Bell-Joint Clamps are available in sizes from 3″ through 60″. Write for free factual information.

DRESSER BELL-JOINT CLAMPS

Dresser Manufacturing Division (One of the Dresser Industries), Bradford, Pennsylvania • In Texas: 1121 Rothwell St., Houston
In Canada: 60 Front St., W., Toronto • Sales offices: New York, Chicago, Houston, San Francisco

American Hydraulic TOWER LIFT and LADDERS

① HYDRAULIC TOWER LIFT

② REVOLVING AERIAL LADDER

③ SEAGRAVE AERIAL PLATFORM LADDER

Safe Way to Service Street Lights, Signals, Trolley Wires and Other Overhead Work

When you need overhead equipment, look to American, manufacturers of bodies for utility industries. Here you have three proved units for any type of overhead work . . . the American Hydraulic Tower Lift . . . American Seagrave Aerial Platform Ladder . . . and American Aerial Revolving Ladder.

Power, telephone, transportation, other utilities, and municipalities use these units for signal wire and street lighting maintenance; tree trimming; painting; heavy line construction work; servicing overhead wires; installing and maintaining street lighting units, traffic signals, electric signs, etc.

Equip your old or new trucks with either of the three (Seagrave, Tower or Aerial), depending upon requirements. Most companies place order for overhead equipment for mounting by us on new American bodies. Send your order or inquiry direct to Cleveland, Ohio, or any of the sales offices listed below.

HYDRAULIC TOWER LIFT

① This universal unit has been a standard with many utility men for many years. Swivel type insulated platform offers complete versatility. Movement of tower controlled by man on the tower platform. Tower lift (heavy duty) comes in three sizes . . . 21' - 25' and 28'.

REVOLVING AERIAL LADDER

② Here's a versatile unit for diversified light duty work. Turns complete circle in as narrow a body as 46". Has 40 spotting positions in 360 degrees yet offers uniform balance regardless of angle. Can be mounted on almost any size truck body. Three sizes . . . 23'6" - 26'6" and 30'6".

SEAGRAVE AERIAL PLATFORM LADDER

③ This heavy duty unit has carrying capacity for two or more men on the big, sturdy and safe platform. Easy to reach across a parked car to service street light mounted on sidewalk. Maximum height of ladder 21', enabling average workman to work at 26' to 27'. Lowest height of Seagrave — 8'9".

THE American COACH & BODY COMPANY

MAIN OFFICE AND PLANT — 9503 WOODLAND AVE., CLEVELAND 4, OHIO
CALIFORNIA DIVISION — 432 FIFTH STREET, OAKLAND 7, CALIFORNIA

SALES OFFICES: INSURANCE EXCHANGE BLDG., DES MOINES 9, IA. · 207 LAKE STREET, MONROE, N. Y. · HEALEY BLDG., ATLANTA, GA.

DISTRIBUTORS: BAKER EQUIPMENT ENGINEERING CO., SUMMIT & NORFOLK STS., RICHMOND 11, VA. · EQUIPMENT SERVICE, INC., 1 WAWARME AVE., HARTFORD 6, CONN.

ACB and

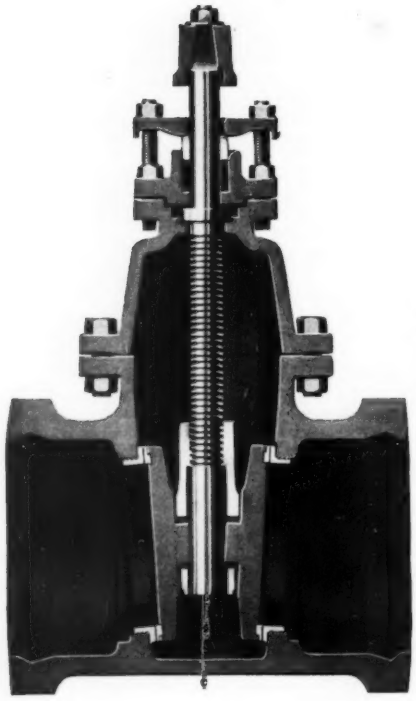
ARE YOU SURE OF YOUR GATE VALVES?

YOU
YOU
YOU

GATE VALVES are used so seldom you can't help feeling uncertain how they will work the next time. That's why cautious buyers base their choice on performance records.

And that's why an overwhelming number of them choose R. D. Wood Gate Valves. They know the reputation of these valves for long and dependable service. Only 3 moving parts to the internal mechanism—spreader and discs. The discs are free to rotate their full circumference when raised or lowered; they are not subjected to drag—and wear at any one point. In closing, pressure is evenly distributed at the center of the discs, which seats them tightly without distortion. No small parts to go wrong. No pockets to collect sediment. Unobstructed flow of water.

Send for complete details. Give your community the safety plus of R. D. Wood Gate Valves, proved in generations of use.

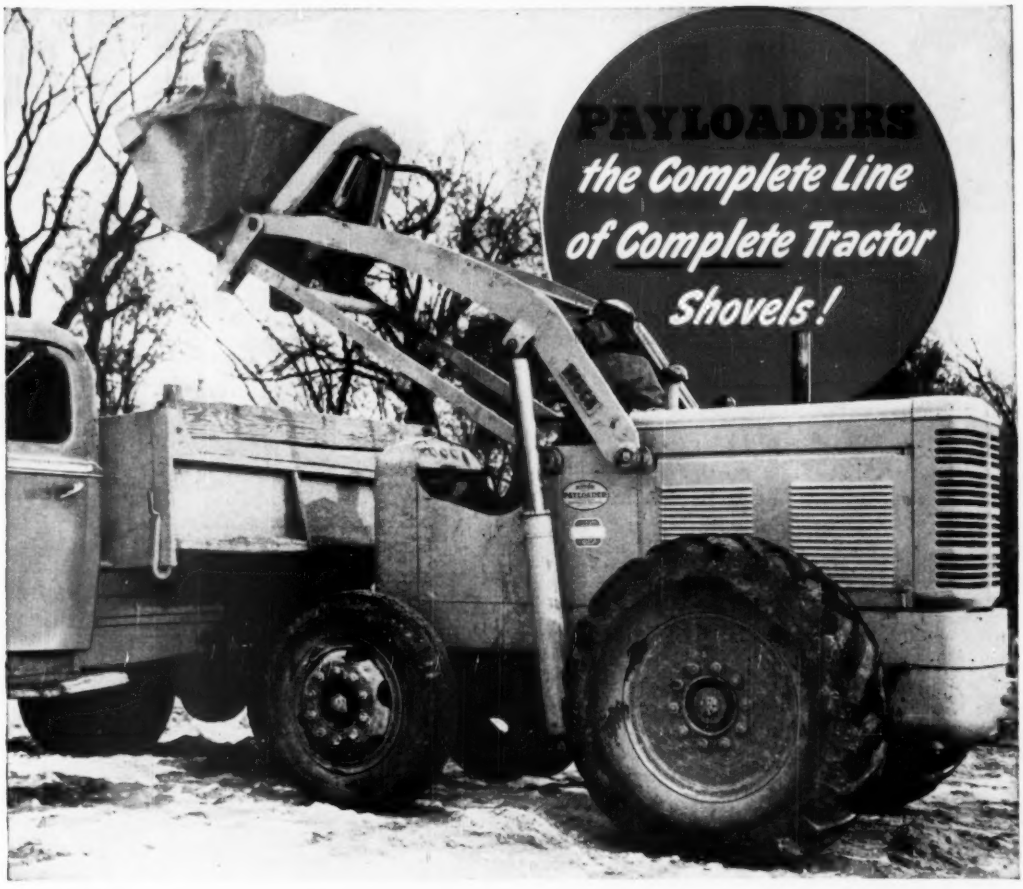


Seasoned castings. Rigidly inspected. For working pressures up to 175 lbs. Tested to 300 lbs. Conforming to AWWA specifications. Bell or flanged ends, or to connect with any standard type of joint. 2" to 30".

R. D. WOOD COMPANY

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of Mathews Hydrants and "Sand-Spun" Pipe (Centrifugally Cast in Sand Molds)



Payloaders are *complete* tractor shovels—not tractor attachments. Shovel *and* tractor are designed and built as a unit in the Hough plant. The tractor itself is, therefore, designed specifically for shovel work with features that guarantee greater production, more satisfaction, wider range of usefulness. Several speeds in each direction . . . quick, easy-acting forward-reverse control . . . operator location for fullest visibility . . . compact, stable design for speed of operation, maneuverability and safety . . . large pneumatic tires all around—are some specific advantages built into the Hough Payloader *tractor.*

Important *shovel* features include automatic bucket tipback that prevents spilling; powerful bucket crowding action; fingertip-controlled hydraulic power to lift, lower, dump and *close* the bucket. Loads are dumped fast or slow as desired; trucks are saved from loading shocks; production is speeded.

Payloaders are built in a complete line—four sizes from 1½ cu. yd. down to 10½ cu. ft. bucket capacity. Bulldozer Blade and Crane Hook attachments are also available as well as buckets for special uses. If you want to know how efficient and useful a wheeled tractor-shovel can be for your digging, loading, grading and material handling work, get the facts on Payloaders. They're backed by 28 years of experience in the design and manufacture of tractor-shovels. The Frank G. Hough Co., 710 Sunnyside Avenue, Libertyville, Illinois.

SEND for FREE LITERATURE on any of the four sizes of PAYLOADERS: the 10½ cu. ft. Model HA, the ¾ yd. Model HF, the 1¼ yd. Model HL or the 1½ yd., 4-wheel drive Model HM.

SAY 'HUFF

HOUGH
PAYLOADER
Manufactured by THE FRANK G. HOUGH CO.

Better-Built

FOR THE LONG PULL

Engineered in GMC's modern, new Engineering Laboratories . . . among the finest in the industry . . . and only one example of the complete facilities of this largest exclusive producer of commercial vehicles.

Tested on the famous General Motors Proving Ground . . . where GMCs are subjected to exhaustive engineering tests and operated for thousands of miles under some of the world's roughest, toughest road conditions.

Proved for millions of economical, dependable miles. Endorsed by hundreds of thousands of owners and operators covering every truck transport vocation. Backed by forty years of truck building experience.

These are some of the reasons why GMC Trucks are Worth More

THE KEY TO GREATER TRUCK VALUE

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

Super-Power
for Matchless Performance

There is No Substitute for All-Wheel Drive and All-Wheel Steer in a motor grader . . . no way in which any rear drive, front steer machine can equal the maneuverability, power-at-the-blade, and all-around performance of an Austin-Western "88" or "99".

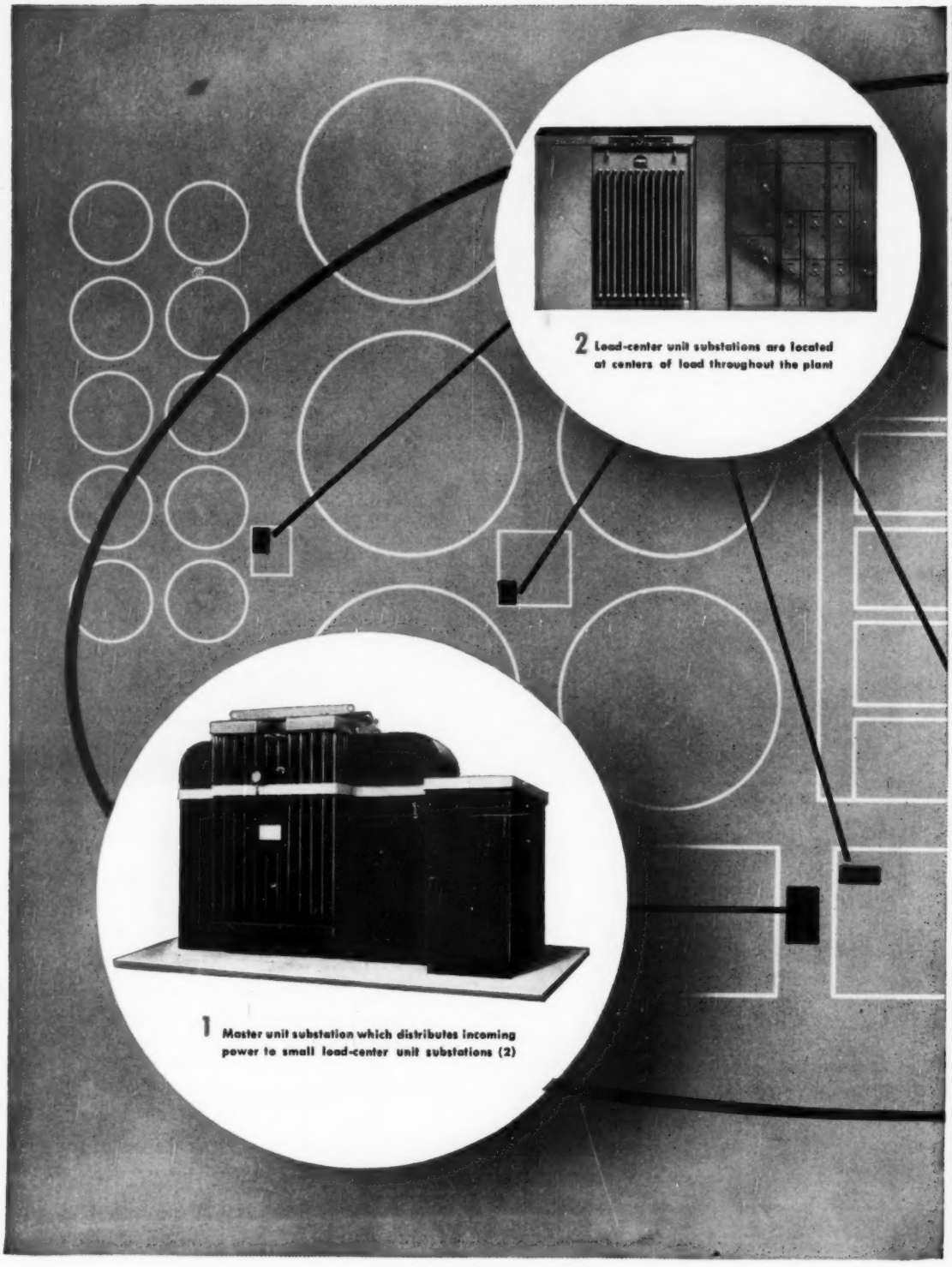
With All-Wheel Drive, there are no idling front wheels—no dead front end to consume power and decrease operating efficiency. All weight is on driving wheels—front and rear—contributing 100% to traction and utilizing the full power of the engine.

All-Wheel Steer provides unequalled maneuverability; saves time on every job; makes it possible to work in places where ordinary motor graders cannot go—do things they cannot do.

Get the complete story of the many additional features of these outstanding graders from your A-W distributor, or send for the latest bulletins.

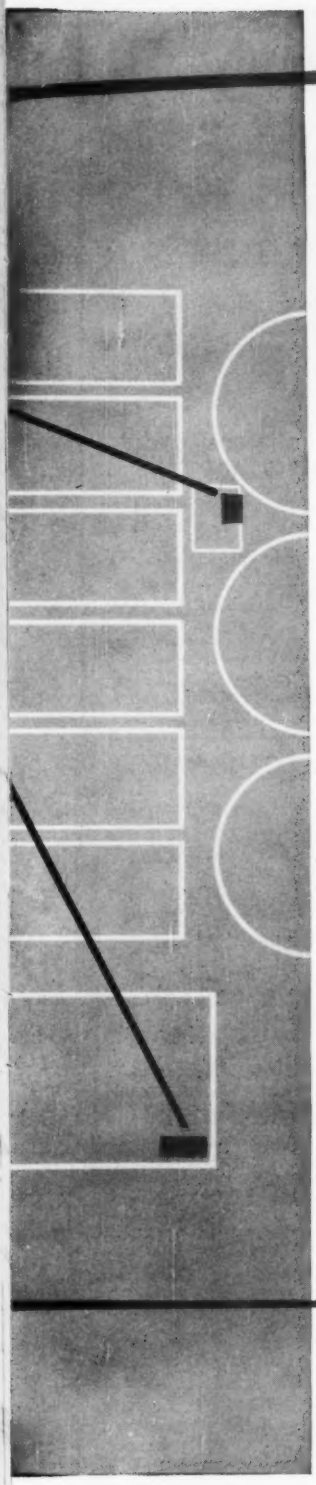
AUSTIN-WESTERN COMPANY, AURORA, ILL., U.S.A.

BUILDERS OF ROAD MACHINERY
Austin Western
SINCE 1859



2 Load-center unit substations are located at centers of load throughout the plant

1 Master unit substation which distributes incoming power to small load-center unit substations (2)



Specify LOAD-CENTER Power Distribution!

This modern technique offers more protection for men and equipment; saves space, keeps utilization voltage normal, simplifies maintenance, increases operating efficiency, streamlines plant appearance—ALL AT LOWER INSTALLED COST

Load-Center Power Distribution—the system which distributes incoming power at 2400 or 4160 volts from a master unit substation (1) to small load-center unit substations (2) located near the centers of electrical load—has received quick acceptance in the water and sewage fields because it offers these advantages over previous systems:

SAFETY—Metal enclosures house in one unit the transformer, switchgear or control, and interconnections; no exposed buses or bushings to create a hazard.

LESS SPACE—Unit substations take less space than an assortment of components because they are designed as a unit, interconnections are short.

EASY INSTALLATION AND MAINTENANCE—Unit substations are factory-assembled and tested, ready for immediate installation. Their enclosures protect against dirt and foreign particles, yet doors allow ready access to compartments for inspection.

HIGH EFFICIENCY—By locating unit substations near the centers of electrical load throughout the plant, secondary feeders are kept short, power loss low. Load voltage stays up.

ATTRACTIVE APPEARANCE—Unit substations streamline your water or sewage plant because they enclose all power distribution equipment in one attractive metal enclosure. Cable connections may be made underground to eliminate unsightly overhead wires and poles. The small substations at the load centers may be combined with G-E Cabinetrol to give a compact, attractive distribution *and* control center.

You get all these features at LOWER INSTALLED COST than if you purchased the components separately! Your consulting engineer or General Electric representative will tell you more about Load-Center Power Distribution, and help you plan your entire electrical layout. Call today, or write for Bulletin GEA-3785, "Load-Center Power Distribution." *Apparatus Dept., General Electric Co., Schenectady 5, N. Y.*

CO-ORDINATED WATER-PLANT . . . SEWAGE-PLANT ELECTRIFICATION

GENERAL ELECTRIC

SLASH PIPE INSTALLATION COSTS

SAVINGS UP TO 80% - 85% NOT UNCOMMON

HYDRAUGER operation SAVES TIME and lots of it! With man-hour costs HIGH, it is wise ECONOMY to equip your crews with TIME SLASHING HYDRAUGERS.

The reason for HYDRAUGER ECONOMY is very simple. It bores a clean, open hole, horizontally through all formations; does it without paralyzing traffic, wrecking pavement, lawns, gardens, etc.

Write for Catalog No. 8 TODAY!

HYDRAUGER CORP., Ltd.
681 Market Street
San Francisco 5, California

The powerful air-driven HYDRAUGER machines (3.2 and 5.2 horsepower) bore and ream any size open hole from 2 in. through 14½ in. The Hydrauger bore is straight and ready for easy installation. Bores of over 200 feet have been made in one operation; makes 8½ in. hole at 30 feet per hour in ordinary soil conditions; 2½ in. hole through rotten rock at 50 feet per hour.

OPEN HOLE

Hydrauger*

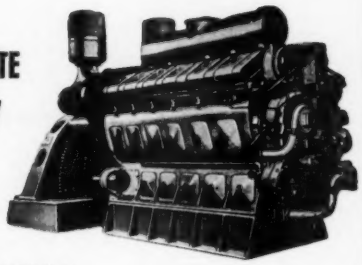
* Reg. U. S. Pat. Office

HY-13a

EARTH BORING TOOL

DIESEL GENERATOR SETS

FOR IMMEDIATE DELIVERY



UNIT CAPACITIES
10 TO 1420 KVA

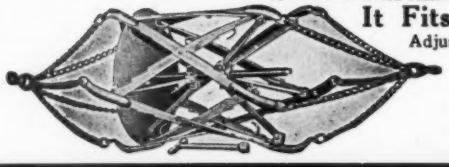
A.C. 50 AND 60 CYCLES
ANY VOLTAGE

Write or wire today for bulletins and complete information regarding these fine fully guaranteed DIESEL ENGINE GENERATING UNITS.

AG SCHOONMAKER CO INC.
Power Division
50 CHURCH STREET NEW YORK 7, NEW YORK

EXPANDING ROOT CUTTER & SEWER CLEANER

Open and in action removing roots and caked sediment like this.



It Fits in on Every Sewer Cleaning Job

Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Write for our new catalog on complete sewer cleaning equipment.

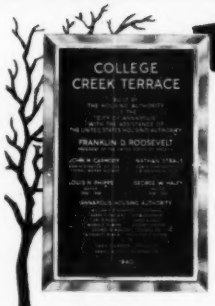
EXPANDING SEWER MACHINE COMPANY
108 East Walnut St. Nappanee, Ind.

FLINK-RAWLS
"Multiple-Purpose"
POWER MOWER

● CUTTER ● MOWER ● ROLLER ● DUMP CART

This "Multiple-Purpose" mower can also be equipped for use as grader, snowplow, spreader, etc. 5-hp. aircooled Wisconsin Engine. 3 mph in operation—13 mph on highway. Runs 8 hours on 1¾ gal. gas. Used widely by highway depts., air fields, parks, athletic fields, estates, farms, schools, transportation companies, large factories. Write for prices and complete information.

FLINK CO. Dept. S-1 Streator, Ill.



your city deserves the best—
UNITED STATES BRONZE TABLETS...

for signs, statues, cornerstones, homes, hospitals, schools, municipal buildings

One of the country's largest plants devoted exclusively to bronze tablet work assures you of the *finest* in bronze at *lowest* prices. Free samples, sketches, estimates—prompt mail service. WRITE TODAY FOR FREE CATALOG!

"Bronze Tablet Headquarters"
UNITED STATES BRONZE SIGN CO., INC.
570 Broadway, Dept. AC, New York 12, N. Y.

HOW YOU BENEFIT FROM *UNIT CONSTRUCTION* IN PITTSBURGH DISC METERS

OUTWARDLY all water meters look practically alike. And the "innards" of most disc meter designs follow a familiar pattern. But there's one all-important difference in the Pittsburgh line. It's the *unit assembly of working parts.*

Here is why this construction is better. Since the measuring chamber, disc and intermediate train all assemble as a complete unit, they can be tested as such for alignment and free running qualities *before* being bolted into the meter housing. This design is justly popular with meter maintenance men whose work it simplifies.

Further, since no part of this unit assembly is attached to the meter case, should freezing occur, the entire working mechanism is free to move downward when the bottom casting breaks, thus preventing possible damage.

Want more facts about the benefits of investing in accurate, long lived Pittsburgh disc meters? Then write for bulletins.

PITTSBURGH EQUITABLE METER DIVISION

Rockwell Manufacturing Company

Pittsburgh 8, Pa.

Atlanta Boston Chicago Houston Kansas City
Los Angeles New York Pittsburgh
San Francisco Seattle Tulsa

ROCKWELL

ARCTIC TYPE

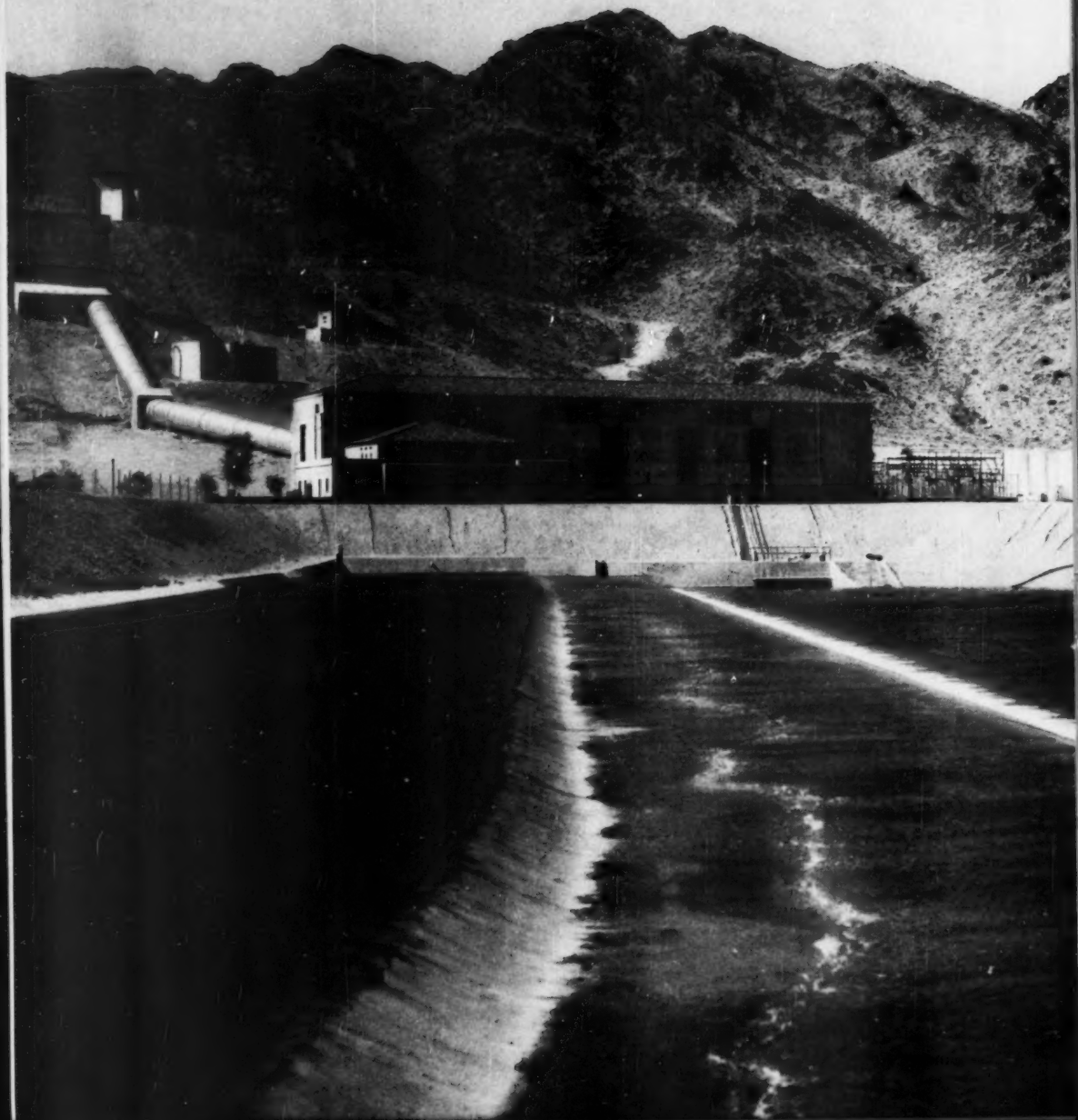
A BRONZE METER WITH BREAKABLE FROST BOTTOM

Circular or straight reading registers are optional

TROPIC TYPE

ALL-BRONZE, SPLIT CASE CONSTRUCTION

Water...481 Miles



from Home!

Southern California Water Supply Depends on Reliable Allis-Chalmers Equipment

HAULING WATER over and through mountains for 481 miles is an enormous task. Yet, that's the length of the longest pipeline of the Metropolitan Water District of Southern California. Bringing water from the Colorado River to the homes and businesses of Southern California has made possible the rapid growth of that area.

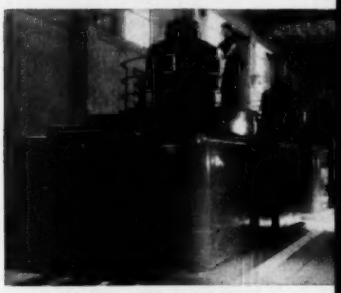
Included in this gigantic system are 45 mountain tunnels, 7 reservoirs, 5 pumping stations, water softening plant, filtration plant and hundreds of miles of acqueducts and pipelines. Today the system efficiently serves Los Angeles and 20 neighboring communities having a combined population of over 3,000,000.

The Iron Mountain Pumping Station (shown here) is Allis-Chalmers equipped. Three 90,000 gpm pumps, operating against a 144 ft head, force water into a tunnel in the mountain. Specifications demanded 88 percent efficiencies from pumps but all A-C units tested 91.3 or better. Three vertical synchronous motors of 4300 hp each drive the pumps. All A-C equipment, operating since 1939, have delivered reliable service.

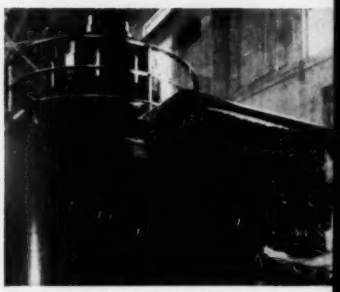
The same kind of fine equipment engineering that went into the pumps and motors of this great system is available for your community, whether large, medium or small. Today, Allis-Chalmers offers you the world's widest range of public works equipment. For additional information call your nearest A-C office or write direct. A 2600

ALLIS-CHALMERS, 1185A SO. 70 ST.
MILWAUKEE, WIS.

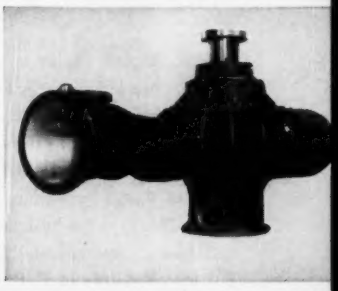
A-C Provides Pumps and Motors for Southern California Pump Station



SYNCHRONOUS MOTORS, 4300 hp each, are of rectangular design, accommodate cooling coils. Housings protect against entrance of sand and dust.



GAUGE CABINET for indicating cooling water and oil condition of motor. Cooling is accomplished by fans which recirculate the air within the motor.



GIANT PUMPS are rated 90,000 gpm and are designed with a 48 in. discharge. The impellers measure 78⅛ in. and are driven by 20 in. shafts.

ALLIS-CHALMERS

One of the Big 3 in Electric Power Equipment—Biggest of All in Range of Industrial Products

for *Fire Alarm* cable you can put in and LEAVE IN

Standard Type I.M.S.A. Fire Alarm Cable Specification No. 1

time has proved: The RELIABILITY of HAZARD *"FULL-WALL"* PERFORMITE INSULATION

Signal engineers and cable technicians have learned by long experience that the ability of rubber insulation to resist moisture, distortion and physical damage grows greater as the wall thickness is increased. That's why Hazard Fire Alarm Cable — with its *"Full-Wall"* Performite insulation (I.M.S.A. Specification No. 1) — has built such an outstanding record for reliability wherever installed.

Each conductor in Hazard Fire Alarm Cable has full protection from a thick wall of this heat-resistant, long-aging Performite rubber insulation that has consistently proved its ability to fight off the destructive agents that often cause failures in other less substantial cables.

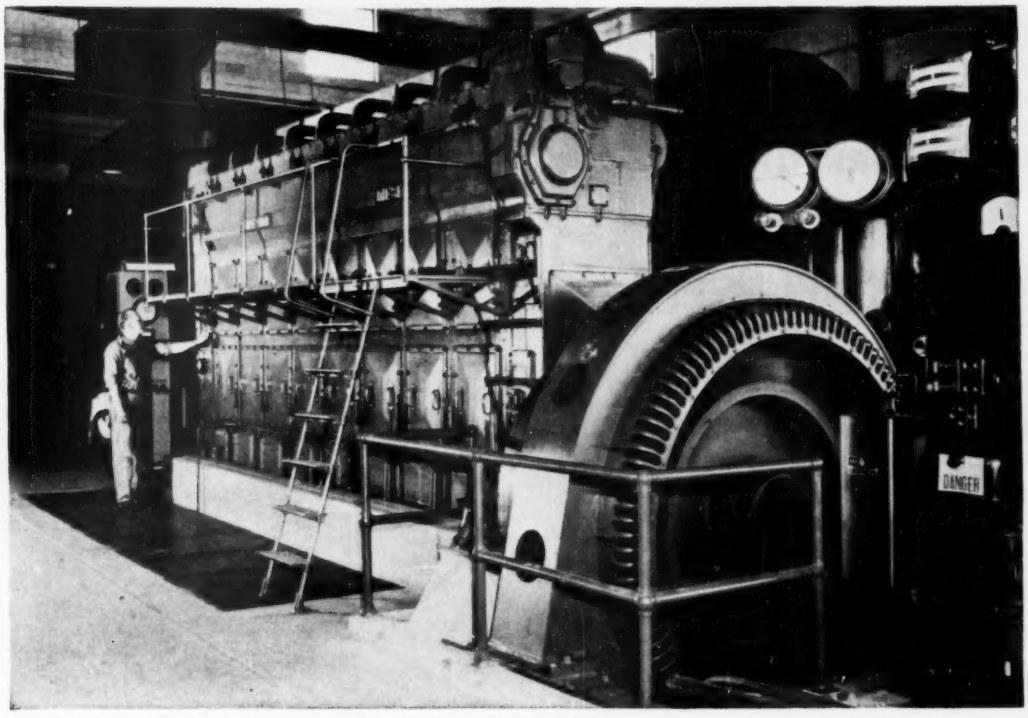
Service records show beyond question the advantage of this Hazard construction in fire alarm cable. A great many installations of Hazard *"Full-Wall"* Fire Alarm Cable, placed in service twenty years ago or more, are piling up a continuing record of trouble-free service.

For every municipal signal need — fire, police, or traffic — there is a carefully engineered Hazard Cable that will render the service you want and should have. Ask your Hazard engineer to discuss the advantages of the various cable designs with you and let him help you in planning improved signal systems. Or write, without obligation, to the Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pennsylvania.

6962

HAZARD

insulated wires and cables for every electrical use



THEY'RE TURNING NIGHT INTO DAY

An Iowa town is enjoying brighter nights and dependable electrical power because they installed a Superior Diesel. The engine they chose is a supercharged model 80-GX-8. It will deliver dependable power for many years under continuous heavy duty service.

Superior Supercharging provides greater power output from the same engine. This overall increase in mechanical efficiency means lower fuel costs per kilowatt hour at maximum and partial loads. Operation of Superior Supercharging is fully automatic. No control devices are necessary.

One of our field representatives will be glad to show you how a Superior Supercharged Diesel can solve your power problems. Just write and tell us when he can call.

THE NATIONAL SUPPLY COMPANY
SUPERIOR ENGINE DIVISION
Plant and General Sales Office: Springfield, Ohio

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MARCH 1949 The American City

Obsolete Contract Clauses Increase Public-Works Costs

Never before have public officials been confronted with the enormous backlog of needed improvements that now exist, and never before have prices reached the peak that presently prevails. Now is an auspicious time to look for every possible means of lowering costs so that the people may get and use the urgently needed projects. Some of the factors mentioned should properly be handled by engineers, some by legal departments, and some may require legislation. By concerted action on the part of all concerned, faulty procedures can be corrected. Better relations between officials and contractors will result, uncertainties and unnecessary expenses will be eliminated, and the cost of doing business with governmental units will be lowered.

By GRANT M. HINKAMP*

PUBLIC WORKS officials are gravely concerned about the high cost of public improvements. So are the citizens of our communities who eventually pay the bills. The construction industry and machinery manufacturers too are much interested in the problem. Wherever groups are convened, papers are given and discussions are held on this problem. Labor is blamed for the present condition, so are material shortages, high taxes, poor production, and what-not. That these things may be contributing factors is not denied.

But public officials could do well to examine critically their own purchasing and contracting methods to see if they too are not in a measure responsible for the present situation. Many suppliers to governmental agencies feel that some buying methods are obsolete, that contract forms are moth-eaten, and that their provisions are arbitrary and unreasonable. Could it not be that streamlining these procedures and modernizing these documents would help to lower the cost of public improvements? Let us consider some of the items which are objectionable to many contractors and manufacturers.

Proposal Guarantees

In many municipal purchasing procedures either a certified check or a bid bond must be presented with a proposal. In some localities only certified checks are acceptable. Whenever a contractor submits a certified check with a bid, he reduces his working capital. It is suggested that in all proposals bid bonds be made acceptable as well as certified checks, leaving the option as to which to use entirely in the hands of the bidder. It would also seem that a certified check on *any* bank should be acceptable; likewise a bid bond signed by *any* representative of a reputable bonding or surety company should be satisfactory. Finally, it is felt that, whenever submitted, checks should be returned with all possible promptness, particularly to bidders whose bids are high and out of line with competition. Bear in mind that everything done to increase the cost of doing business must of necessity be reflected in subsequent proposal prices.

Process Patent Clauses

Contracts and specifications for water and sewage works very often contain a clause which states that the contractor or equipment manufacturer shall assume liability for the payment of royalties or for patent infringement claims should patented treatment processes be involved. This sort of clause works a hardship on the maker of standard machinery who is not interested in any patented process. It is generally considered proper that a reasonable royalty be paid the patentee for the use of a patented process when such use reverts to the advantage of the city. Such fees, however, should be paid directly by the city when such a process is recommended by its engineers. There certainly is no justification in "passing the buck" down to the manufacturer of a piece of equipment such as an electric motor, which is standard in that it has hundreds of possible applications and is not an integral part of the process itself. The inclusion of such specifications adds uncertainties to the cost of the manufacturers' products and naturally adds to the price he must charge for them.

Closed Specifications

Specifications for public lettings are frequently copied from those submitted beforehand by a machinery manufacturer in which he stresses some unimportant feature which he has incorporated in his design. Other manufacturers may make an article as good or even better, but their designs may not include this particular unimportant and often unnecessary feature; or, if the gadget has a function, it may be performed by a device using an entirely different mechanism. Of course the "or equal" phrase is usually included, but the manufacturer of the equal type of product is often at a disadvantage in lettings. Specifications should be broad enough to allow for competition, and yet be so carefully drawn that all essential features may be secured. Results are more important than the mechanical methods used to obtain them.

Consequential Damages

Municipal contracts sometimes have a warranty clause which is so worded that the contractor may be held liable

* Engineer, Public Works, General Machinery Division, Allis-Chalmers Mfg. Co., Milwaukee, Wis., and member of the Committee on Equipment of the American Public Works Association.

for any and all direct, indirect, or consequential damages that may be caused by a defect in the equipment furnished. A clause of this kind leaves the door wide open for unlimited and unpredictable losses. To make these clauses even worse, they frequently state that the city engineer (or some other designated city official) shall be the sole judge as to what the amount of such damages shall be. Any contractor who accepts a clause of this kind is inviting disaster. Reliable contractors and manufacturers are willing to accept a fair responsibility for default or defect, but they prefer that it be limited to known or predictable consequences.

Liquidated Damages and Delay Clauses

It is common practice to include a liquidated-damage clause in public-works contracts. Most manufacturers do not like these clauses at all, but if they must be in because of legal requirements, the amount of such damages should be reasonable, and the stipulations defining what the engineer may consider a justifiable delay and a reason for extending the time should be broad. Many contracts state that whenever delays are suffered and an extension of time is desired, the contractor must give notice thereof in 48 hours or some similar short period. A reasonable time should be allowed for giving such notice.

Payment Clauses

Many equipment contracts call for unusual delays in the making of partial and final payments. For example, one recently called to my attention stipulated that final payment need not be made until after a final field test had been made, and the city had two years after installation in which to make the test. Such a clause is most unreasonable and merely results in bids that are high enough to cover all costs in the partial payments, plus interest charges on the unpaid balance for two years.

Tests

There are many trade associations to which reputable manufacturers belong. Two that are well known to public-works engineers are the Hydraulic Institute and the National Electric Manufacturers Association (NEMA). Such associations have set up certain definite specifications for products of their members which have been accepted as standard by the industries concerned. They also have set up standard test methods which are used in shop tests and which have, in most cases, been adopted by municipal and consulting engineers for field tests. Occasionally, however, someone writes a public-works contract with a test clause that is entirely different. In order to meet this clause a new design may have to be made or a new procedure followed—making the equipment special. The result is increased cost and frequently a product inferior in performance and quality to the standard lines of fully developed equipment.

Efficiency Guarantees

Many contracts for major items of equipment frequently specify that a certain efficiency must be met, and a penalty is provided for in case the stipulated efficiency is not reached. Reliable manufacturers usually are conservative in the claims they make for their machinery. They are not opposed to these efficiency clauses but they do believe that, if a penalty is just and proper for failing to meet the specified requirement, then a bonus should be given for a performance better than that called for.

Authority of Officials

Some contracts give excessively wide authority and control to some designated official and state that the decision of this official shall be final and binding. Although most officials try to be impartial, this could set up a kind of dictatorship which is repulsive to our American way of thinking. Whenever matters come up which are not specifically covered in the contract, both the contracting parties are entitled to consideration, and arbitrary resort to a blanket authority or "as the engineer directs" clause should not be possible.

Repetitious and Conflicting Clauses

It is recognized that public officials must be cautious whenever the expenditure of public funds is involved. The writing of clear-cut specifications and contracts is a real necessity to them and welcomed by contractors. The better and more complete the plans and specifications, the fewer uncertainties there will be for the prospective contractor to consider, and the fairer and cheaper will be the bids.

However, in their zeal to be careful, officials have frequently confused the issues by repeating clauses, adding a lot of verbiage; and, while apparently repeating what had been said previously, may alter the wording slightly. These somewhat different wordings merely add a lot of confusion, and make possible different ideas as to what is really meant, and frequently require clarification through time-consuming negotiation.

For example, a contract recently proposed by one of our large cities (and over the name of one of our nationally known firms of consulting engineers) contained slightly different patent clauses in five scattered places. Would not one patent clause have sufficed? It certainly would have made for clarity.

Many municipal contracts and specifications are of the all-inclusive type, mimeographed or printed. The object of some engineers seems to be to use the same ones as often as possible. A manufacturer may be submitting a bid on only one piece of equipment, the specifications for which cover only a few pages. But he has to wade through page after page of extraneous matter and then sign a proposal in a big volume which deals with everything from digging a hole in the ground to furnishing extra keys for the front-door lock. The issues are confused and the contractor may be accepting responsibilities in no way related to the item he is bidding upon. Separate contract forms should be used in such cases; if that is impracticable, then pertinent sections should be indicated as the only ones applicable to the item.

Deposits of Plans and Specifications

When a city advertises for bids on a job it is naturally assumed that it is seeking competition. If that is the case, why are there often so many restrictions placed on contractors, making it difficult or expensive to secure plans and specifications?

It has come to be general practice to require a deposit for plans and specifications taken out by prospective bidders, said deposit to be returned when the plans are returned in a reasonable time after the opening of the bids. That is as it should be.

But, of late, many cities are requiring a substantial deposit—many times the actual cost of blueprinting—and returning only part of it to actual bidders. That is an excellent way to discourage bidders, stifle competition, and increase the legitimate costs of doing business. Engineers and officials who place such restrictions on prospective bidders are doing their cities a definite disservice.

If the job is at all complicated two or more sets of plans and contract documents should be made available to bidders.

Price Adjustment Clauses

The last few years have been extremely difficult ones for manufacturers of major machinery items. There were the problems of reconversion from war activities, labor unrest, wage increases, fluctuating material prices, inability to get essential materials, allocation of other materials, governmental restrictions and their subsequent removal. All these things made pricing of capital goods—such as require a year or more to design and manufacture—a difficult and dangerous procedure. So the manu-

(*Continued on Page* 115)

A Modern Fire Station For $56,000

By A. D. COONS
City Manager
Pacific Grove, Calif.

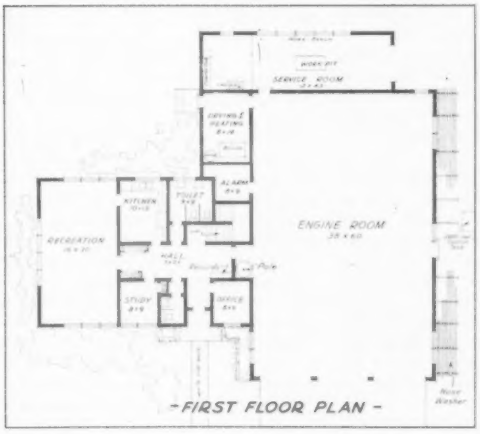
A NEW station at Pacific Grove Calif., was opened as a living war memorial to citizens who served in World War II. A bronze plaque carries the names of 12 members of the Pacific Grove Volunteer Fire Department who had served their country. The Fire Department consists of five paid driver-engineers and 18 volunteers.

The first designs considered were of the conventional two-story station with living and recreational quarters over the equipment room. Because of the necessity of providing a fire-resistive floor separation between the first and second floors, the cost of this type of construction was found to be prohibitive.

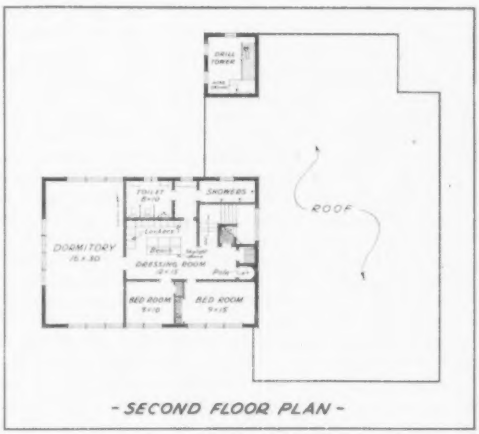
Fire Chief Lavere Todd then made an inspection trip to study some 18 stations before deciding on the new design which was worked out in co-operation with Architect Robert Jones. The plant incorporates a single-story four-hour-fire-resistive equipment room, 38 by 60 feet, accommodating six pieces of apparatus. The adjoining recreational and living quarters are of two-story, frame, one-hour-fire-resistive construction. Sleeping quarters for 16 men are provided on the second floor. On the first floor, besides the offices and alarm room, are located a large recreation room with an adjoining modern kitchen. To the rear of the equipment room is located a one-story service and repair room 12 by 43 feet. At one end of this room and rising to a height of three stories is a drill tower.

Other features of the new station are radiant floor heating for the entire first floor, built in battery-charger outlets in the floor of the equipment room, vertical venetian blinds in the recreation room, electrically operated doors controlled from the recorder desk and a 2,000-gallon suction tank under the outside concrete apron.

Our citizens of Pacific Grove appreciate the foresight, and are pleased not only with the modern structure but also with the ability of their City Council and administrative officers to hold the contract cost to $55,668 at a time when it did not look as if the $60,000 appropriated for the job would be sufficient.



- FIRST FLOOR PLAN -



- SECOND FLOOR PLAN -

Penstock Pipe Cleaning Restores Hydro Capacity

Twenty-inch steel pipeline is cleaned by a chain-wrapped, heavy rubber ball ordinarily used for cleaning sewers

In this beautiful mountain setting, Colorado Springs tried its new cleaning method. The pipeline is barely visible in the background.

By F. H. WILEY
Electric Superintendent
Department of Public Utilities
Colorado Springs, Colo.

IN 1925, the City of Colorado Springs, Colo., built a 1,250 kva hydro plant at a location one-third the distance to the summit of Pikes Peak. The penstock brings the water from Lake Moraine to the plant, a distance of 12,682.9 feet, within which distance a static head of 1,164.8 feet is developed.

This line was built with steel pipe 20 inches in outside diameter with wall thickness varying from 5/16 inch at the upper end to 9/16 inch at the lower end. It is coupled with Dresser couplings and the pipe was painted inside with an asphaltic protective coating.

It was designed for a maximum capacity of 21 second-feet, at which flow the friction head loss was originally about 200 feet, or 15.2 feet per 1,000 feet. The plant would originally develop its full rating of 1,250 kilowatts with a flow of about 18 second-feet.

As time went on, the nozzle pressure at full load showed a marked decrease, and the peak capacity of the machine fell off considerably. There was apparently something increasing the friction in the pipe, and since the change developed slowly it was presumed to be a gradual tuberculation of the pipe walls rather than an obstruction in some one location.

To make sure of this, a test was run in June 1943, when the pipe was 18 years old. Recording pressure gauges were connected at four different points along the line and load tests of varying amounts ran for definite periods of time. A later examination of the pressure gauge charts showed an even distribution of friction head loss along the length of the line, and eliminated the possibility of an obstruction in the pipe at any one point.

The test indicated that for a flow of 21 second-feet the friction head loss would now be 35.4 feet per 1,000 feet, or more than twice the original loss, and the peak capacity of the machine was a bare 1,000 kw, or 80% of what it used to be.

Cleaning Plan Selected

The problem then was to remove the growth of tubercles which had evidently been permitted by the deterioration of the inside pipe coating. Advertisements had been seen of a "Pipe-Crawler," now made by Rotary Pipe Crawlers, owned and patented by Rupert Chawner of Corona, Calif. These crawlers consisted of a heavy rubber bladder covered with a steel chain net, which was to be inserted in the pipe to be cleaned and forced through with water. Correspondence with the manufacturers revealed that the usual use of the Pipe-Crawlers was for cleaning low-head sewer lines, but no reason could be seen why they would not do this job.

Not knowing how large the rust tubercles in the pipe might be, two sizes of Crawlers were ordered, one of 18-inch diameter to run through first and one of 19½-inch diameter for finishing. Also, not knowing how much material would be removed, it was decided to make the first run through about one-third of the line. Accordingly, a length of pipe was removed about one-third of the way down, where it crossed a trestle, to allow the Crawler and the water behind it to emerge.

Tubercles Not Excessive

This afforded the first chance to see the inside of the pipe and it was somewhat surprising to find the rust tubercles only about ¼-inch high and not extremely numerous. A worse condition had been expected, based on the large increase in friction loss.

This length of pipe which was removed was also near a wye-branch in the line where possible trouble was expected from the Crawler's taking the wrong branch. These fears were unfounded as the Crawler apparently follows the flow of water without trouble. The manufacturers cite instances where they have followed very devious courses along with the water flow.

Luckily there was already installed a short tee-branch with a gate valve just below Lake Moraine where the pipeline originates. The Crawler was inserted into the line by deflating it

enough to enter it in the branch and then pumping it up to a tight fit in the pipe with a tire pump. After this it was rammed through the gate valve into the main line by using a 6-inch log as a battering ram. When the Crawler was in place, the gate valve on the branch was closed and water admitted behind the Crawler through the main valve in the dam. Some water leaks around the Crawler past the chain net, so flow was gradually increased until the Crawler started to move. Later measurements showed about two second-feet of water necessary to keep the Crawler moving.

Crawler Easily Traced

The pipeline is laid on the surface of the ground most of the way so the progress of the Crawler was easily traced by sound. Along the comparatively level stretches it moved perhaps two miles per hour, sometimes stopping completely until a sufficient head of water built up behind it to start it again. When it went over a knee in the line and started down a steep grade, the water column behind it would be somewhat stood on end so the pressure on the Crawler would increase rapidly and its speed increase accordingly. At the foot of a steep hill it would pass a point with such a swish that a test was made on a later run to determine its actual speed. A man was stationed at one end of a measured length with a gun which he fired as the Crawler passed him. At the other end a man with a stop watch took the time from the flash of the shot until the Crawler reach him. It was somewhat disappointing to learn the actual speed was only about 30 miles per hour.

The first run through the upper third of the line was made with the 18-inch Crawler and brought down only a moderate amount of dirt. The next run was made with the 19½-inch Crawler with more satisfactory results and the third run with the 19½-inch Crawler filled about half full of water and then inflated with air. The fact is that with air only, the Crawler has a specific gravity lighter than water and hence is forced to the top of the pipe by its own buoyancy, causing it to roll on the top and scrape the bottom. With water in it, the specific gravity is no greater than that of water, hence it sinks to the bottom of the pipe and rolls along the bottom scraping the top.

A third outstanding feature of this device is that the chain around the ball causes a number of circumferential hydraulic jets to squirt past the Crawler and thus keep the debris, sand, etc., floating ahead of the ball, and obviating a jam of material which the Crawler has already cut loose.

In fact, the speed of the Crawler is approximately 90% of that of the liquid.

In gravity lines, for example, of 30-inch diameter, it has been observed on many occasions that the first indication of sand being moved would occur 40 or 50 feet ahead of the Crawler. The vertical cross-section would possibly show a 1-inch depth of sand at this point and would gradually build up until it would reach little more than half a pipe-full where the sand was in contact with the Crawler itself. These features add to the efficiency of the device.

Naturally, the first objection the non-user would cite is that the Crawler would clog and would have to be dug out. In 10 years of operation we know of only two cases, one of which was a sewer line in the city of Riverside, where a surveyor's pin had been driven right through the center of a 10-inch clay pipe. This line had been giving trouble, and the ordinary spiral snake would screw right past the pin; actually, it was a great benefit that this section was dug out and replaced.

Full-Length Runs

The three test runs went off very smoothly. Since most of the time was consumed in getting the Crawler in the pipe, it was decided to replace the length of pipe which had been removed and make the rest of the runs through the entire length.

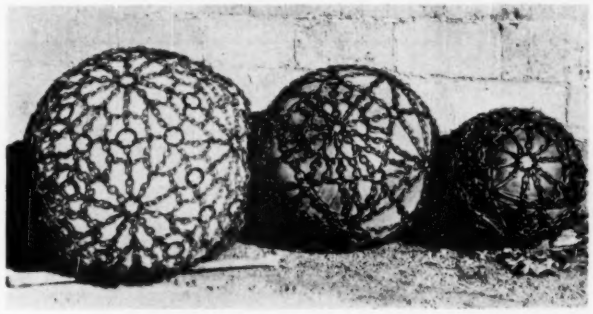
To provide an exit for the Crawler at the lower end of the line it was necessary to fabricate a length of pipe with an elbow and connect this to the open end of the line to divert the flow away from the plant and into the creek.

Runs were made through the entire line, two with air only in the Crawler and then two with water and air, until after eight runs very little dirt was coming through with the Crawler and the line was considered clean. The material removed consisted of rust tubercles and chunks of the inside coating. The chain net on the Crawler was practically worn out but the rubber bladder showed no signs of use.

After cleaning, the line was put back together and another test run with the recording pressure gauges. The results showed the original capacity of the plant restored and the friction head loss reduced to 16.2 feet per 1,000 feet with a flow of 21 second-feet, almost as good as new.

From a dollar-and-cents standpoint the increase of 26% in capacity from 990 kws to 1,250 kws meant a sales possibility of 260 kws every hour of operation at peak capacity, paying for the labor and materials used in cleaning in a very few hours.

The exit of the Crawler and the column of water behind it occurred at the foot of a steep hill and was spectacular enough to make a few feet of movies of the show.



Typical cleaning balls used in the penstock cleaning.

The first cleaning job took four men seven days to complete, including preparation of the special fittings, the trial runs through the upper section of pipe, and the actual cleaning.

One year after the first job in 1945, the increase in friction head loss was again noticeable but not serious. In two years the peak capacity of the plant had dropped 12% and the line was again cleaned by eight trips of the Crawler through the line. This time the job required four men two days and the plant capacity was restored to 100%.

Two and a half years after the second cleaning, in 1948, the plant capacity was down again about 12%. Another cleaning job was done, and in order to see what the minimum number of trips of the Crawler through the line might be, only three trips were made, all with only air in the Crawler. The capacity of the plant was restored to 96% this time, which indicated that another day should have been used to run a total of at least six trips. Three men worked for a day and a half on this job.

Iowa City Goes to Town

Street widening, parking, bridge construction, swimming pool, fire trucks, traffic lights are among the major new improvements

By CARL S. BERGER

FARMER John Sulek had plenty to grumble about last week as he stomped into Iowa City's police court to pay a fine for double-parking.

"But I couldn't find a place to park," lamented the corn farmer.

Sulek's indirect complaint about Iowa City's greatest problem, an excess of cars, has been impressed on the minds of residents during the past 18 months. As a result, this community of 20,000 is paving, building, tearing down, and purchasing, not only to ease traffic congestion, but to make the city a better place for its citizens and its famous 101-year-old sidekick, the State University of Iowa.

Most of the present problems arose within a year after the war's end, when 10,000 veterans and students crowded into this college town. The streets soon overflowed with their cars; the city's housing situation was critical, business felt cramped. The situation called for immediate action.

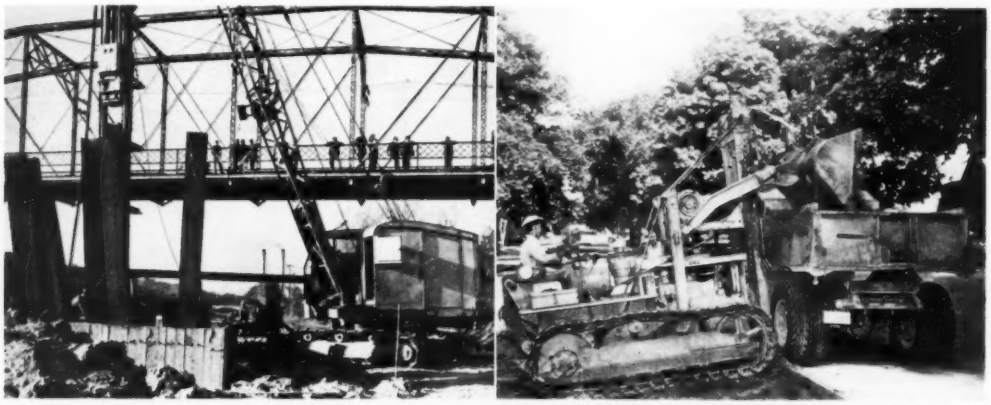
Today, streets have been widened and paved; new traffic lights have been installed; parking meters line the business district; construction on a new Benton Street bridge has begun; a community swimming pool is nearing completion, and plans are progressing toward the "lighting up" of the city streets.

Other city improvements include the purchase of two new fire engines for the 17-man fire department, and the purchase of property which is now being converted into a municipal parking lot.

With the start of construction on the Benton Street bridge several months ago, Iowa City's self-improvement program hit a new high. The $265,000 structure is expected to be ready for traffic by July 1949. Leading out to U. S. Highway 218 from the city, the 476-foot bridge will take the strain off the Burlington and Iowa Avenue bridges. These two today carry the entire load of east-west traffic across the Iowa River.

The project did not involve a city election for the bond issue. The bonds were offered for sale at a public auction following the usual public hearing. The old condemned bridge at the present site will be torn down as soon as pipes and lines are removed. The new bridge is being built by the Jensen Construction Company of Des Moines.

Recent complaints, like the one by the Madison Township Farm Bureau, which recommended that farmers by-



Left: Pile-driving steel beams for one of the main piers on the new $265,000 Benton Street bridge, showing the old bridge in the background. Right: Work on Iowa Avenue's center strip. This loading method speeded matters up.

pass Iowa City as a trading area because of lack of parking facilities, have spurred authorities to action. Mayor Preston Koser and the City Council instituted a series of projects which have lessened the traffic problem.

One phase of this was the purchase, in the fall of 1947, of an apartment house at the edge of the business district for $40,000. This building is being torn down and the lot will be used for the city parking lot.

A street-paving project was also begun when the city approved a contract with the William Horrabin Construction Company last summer. This contract is part of a $98,000 paving project to be completed by August 1, 1949.

Today, Iowa Avenue's busiest blocks have been widened by the removal of the center scenic strip for three blocks. Paving is continuing on seven other Iowa City streets.

Still another aid toward eliminating traffic congestion was the purchase of the latest type of traffic-control signals. Four new lights were installed on busy town intersections. They work on an electronic principle with a detector buried in the pavement some distance back from the corner. The cars, when passing over the detector, change the lights. The last purchased light cost $4,585. This sum will come out of revenue received from parking meters.

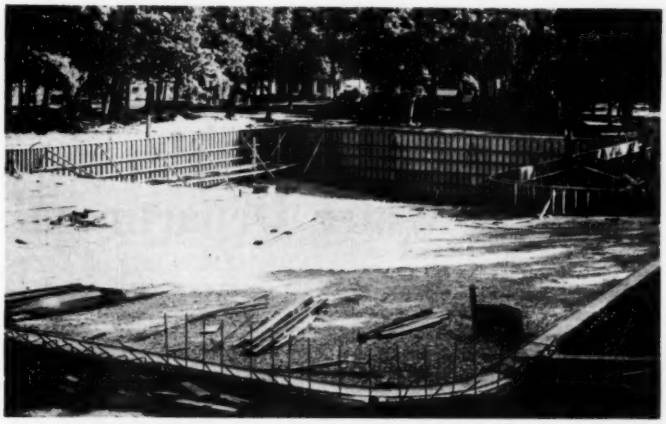
As many cities have done before, the City Council turned to parking meters last spring in an effort to keep traffic moving in the business district. However, this turned out to be only a partial solution.

Comment on Parking Meters

Commenting on the meters and the Farm Bureau complaints, the *Press-Citizen* pointed out that "before the days of parking meters in Iowa City, motorists could not find a place to park anywhere downtown. The installation of the meters definitely has loosened up parking . . . Critics of the parking situation overlook a factor with which the city must cope, namely, the high university enrollment and the hundreds of student cars in the city."

Iowa City, continued the *Press-Citizen,* will push its efforts to solve the problem.

Another phase of civic improvement ended when a second fire truck arrived in July 1948, two years after the first new truck. This brought the fire department's total to four large trucks and one emergency truck. The new aerial ladder truck has an 85-foot telescoping ladder which raises and lowers itself automatically. Purchased for $40,000, the new truck was authorized after the Iowa Fire Prevention Association survey suggested additional equipment.



View of the $135,000 municipal swimming pool in Iowa City in one of the last stages of construction. The pool will have its first tryout next summer.

The city's swimming-pool idea had been floating around in resident's minds for a long time. Finally, plans were approved last summer for a $112,500 municipal pool. High costs increased the final estimate up to $135,000. Part of the deficit has been met by a voluntary pool fund begun last spring. That fund now amounts to over $11,500. The remaining amount will probably be made up by a new bond issue, the third so far on the pool. One of the largest bond bids came from the White-Phillips Company of Davenport, which purchased $50,000 of the bonds at 2½% interest with a $350 premium. The pool at present is in an advanced stage of construction.

The next step of Iowa City's municipal improvement plan will probably be a reorganization of the city street-lighting system. A completely new lighting system has been proposed, to cost $35,000. Because it would call for an additional assessment from downtown property owners, a committee from the Chamber of Commerce was organized.

Together with a City Council light committee, they visited Rock Island and Burlington to observe their new mercury-vapor and incandescent lighting systems. Returning from the visits, the combined committee was reported favorably impressed by the new "white ways" of those cities.

Thus Iowa City, spurred on by the familiar urban challenge which confronts her sister cities across the nation, is moving ahead toward a better and more efficient life.

Importance of Inspection and Testing in Purchasing

PURCHASING without the necessary follow-up of inspection and testing lacks one of the safeguards which protect a municipality by seeing that "what was ordered was delivered." When I was with Cook County the volume of purchases did not warrant a county laboratory, but we made use of the laboratories of the local universities, the coroner's laboratory, the state's laboratory, and the facilities of Commercial Testing and the United States Testing Company of Hoboken, N. J. Commercial Testing did most of our analysis of fuels, while the United States Testing Company handled our detergents, soaps, insecticides, food problems, etc. As a result of these tests, the county made sizable savings for these reasons:

1. It had a psychological effect on vendors and receiving clerks.

2. Where vendors consistently deliver sub-grade materials, such vendors are declared irresponsible and prevented from dealing with the city.

3. Collusive agreements between receiving clerks and salesmen can be detected by such tests.

4. Public inspection of the records where the laboratory tests are involved give a certain amount of warranty that the purchasing agent is protecting the taxpayers' dollar.

If a municipality does not have such testing facilities of its own, I feel it is important that they use outside testing services, for not to test deliveries on some of our "blind" articles leaves a procurement officer open to severe criticism.

JOHN F. WARD
Deputy Purchasing Agent
Chicago, Ill.

Leakage survey pays big dividends to Arthur, Ill.—population, 1,600

A Small Water Department Checks Leakage

Main Street, Arthur, Ill. Water supply is more dependable here because of Superintendent Dixon's work in improving the distribution system.

By CECIL W. BROWNING
*University of Illinois**
Urbana, Ill.

PROMOTION and appreciation were the rewards of Lafe Dixon, Superintendent of Water and Sewers, Arthur, Ill., when he realized the needless waste of water in his community and corrected it despite initial opposition from some members of the village board.

The village has an estimated population of 1,600. Three drift wells 90 feet deep constitute the present source of water. This water, which requires no treatment, is pumped from the wells by three Cook turbine pumps to an elevated tank located 3,300 feet from the wells. Two of the pumps have capacities of 100 gpm against a 92-foot head. The third can handle 40 gpm against the same head. The plant was originally constructed in 1911 at a cost of $30,000 and improvements have been added since then to keep abreast of increased water demands due to the growth of the village. Every water user is metered.

In 1941, when the present superintendent assumed his duties at the water works, the plant was badly neglected. If profits were realized from the water works at the termination of each year, it was the practice to distribute the money to other village funds, and no attempt was made to keep a water fund on hand.

No effort had been made to determine the amount of water which was unaccounted for in the 30 years of the plant's existence, and the only means of discovering leaks in the distribution system had been that of observation. This method, although reliable, is insufficient, as drain tile, sewers, or porous soil will often carry water away as quickly as it leaks from the water lines.

Superintendent Dixon feared that the distribution system was in poor condition because numerous leaks had been detected by observation. In spite of this, the mains had been grossly neglected. He decided that it would be necessary to install meters on the pumps in order to determine accurately the amount of water which was unaccounted for. A special meeting of the village board was arranged and the installation of such meters was proposed. This proposal initially met with determined opposition from some of the village board members, and only by showing the value of the lost water did the superintendent convince the board that meters were necessary.

By assuming only 20% unaccounted-for water, he estimated that the yearly sale value of such water was $3,600. He based this estimate on the minimum charge of $1.50 per 1,500 gallons and a pumpage of 50,000 gallons per day. He also pointed out that the distribution system had been ignored for 30 years and that the water loss was probably much higher. As a result of the convincing arguments of the superintendent, the meters were installed on the pumps. On one of the 100-gpm pumps he placed a 4-inch Trident meter. On the other he placed a 3-inch Propeloflo meter. On the 40-gpm pump he placed a 2-inch Propeloflo meter.

Records of pump meters and consumer meters, obtained by one-month's operation, showed that only 7% of the pumpage was accounted for. The assumption logically followed that all the meters of consumers were not functioning as they should. This inefficient functioning of the meters would tend to exaggerate the amount of unaccounted-for water.

Armed with this information, Mr. Dixon arranged a second meeting of the village board and suggested that a waste survey be conducted to determine the location of leaks. On the basis of the minimum rate and a pumpage of 50,000 gallons per day, he calculated that the sale value of wasted water was $16,500 per year, and he pointed out also that the repairing of the distribution system would reduce the cost for electric power and would increase the useful life of the wells. All this evidence was sufficient to convince the village board that the superintendent was acutely aware of the situation and that immediate corrective measures were justified.

Work Based on Survey

The repairing of leaks was commenced on completion of the survey. The work was started in those sections of the distribution system adjoining the elevated tank. When the work in a section was completed, the section was isolated and the elevated tank connected to it by a main which had been previously repaired. The tank was then pumped full, the pumps stopped, and the pressure drop noted over a period of time when the consumption was negligible. This method of checking the effect of repairing leaks meant working at night and in the early morning.

The village board was presented, concurrently with this procedure, with

* Mr. Browning is a graduate student at the University of Illinois, and prepared this paper as part of his work for an advanced degree in engineering.

monthly reports including such items as the number of active and inactive meters, new connections, the amount of water pumped, the amount of water metered, the work completed and in progress on the system during the month, and a complete financial statement. These reports were used to check the improvements made in the system.

The following situation is brought to light to illustrate the large amount of water which can be lost by a single leak. One of the sections in which the survey revealed a large leak was isolated and connected to the elevated tank. As the pumps filled the tank, the pressure head on the section increased, until it reached a height at which the water leaked from the section at the same rate at which the pumps were filling the tank, and the tank could not be filled. On inspecting this section the following day, a sewer manhole cover was lifted by chance and water was seen pouring into the manhole from an open-joint farm tile. On further investigation the farm tile was found to be the effluent tile from a large cesspool built by a company which manufactured underground tanks and vaults. The tiles were uncovered, and at the point where the tile crossed the 4-inch cast iron water line, a joint was found to have blown out and water was running freely from it, through the tile, into the manhole, and out the sewer. The water line passed so close to the tile that it was necessary to excavate the tile in order to repair the joint. This was a definite health hazard as well as a large water waste. When this leak was repaired, the pressure remained reasonably constant when the check was repeated.

The amount of water unaccounted for was decreased from 93% of the total amount pumped in 1941 to 35% of the total amount pumped in 1948 by repairing the leaking water mains and faulty meters and by checking the progress with the monthly reports. This meant increased life of the well pumps, increased useful life of the wells, and increased water-revenue income. The village board was as eager thereafter as was Superintendent Dixon to improve the water works. In order to gain public approval of the work, Mr. Dixon wrote articles in the local newspaper and lectured to the consumers. In this way he informed the people of the work being done and of such things as the fact that they were purchasing their water for 20c per ton.

Superintendent Lafe Dixon.

Montreal Builds Biggest Prestressed Pipe

Rows of finished prestressed pipe await use in the new intake.

THE largest-diameter prestressed concrete pipe in the world was described to the water-works men assembled in New York at the annual meeting of the New England Water Works Association, held recently in New York City. The installation was made by the City of Montreal, Canada, and consisted of 9,500 feet of 84-inch-diameter pipe. R. M. Doull, manager of the Preload Company of Canada, Ltd., described the work.

Pipe this size had never been built before. And in all previous U. S. installations, prestressed concrete pipe contained a steel diaphragm. A few examples existed in foreign countries of pipe built without the diaphragm. Mr. Doull estimated that the design cut the use of steel by 800 tons, or 1½ tons per pipe section, and reduced cement requirements by 10%.

The project required a special plant built for the purpose of manufacturing this pipe. Each pipe section was 18 feet long, had a 5½-inch wall, and weighed 16 tons. Each was jointed with jute and the entire length was encased in an envelope constructed of concrete.

The pipe was stressed both longitudinally and circumferentially. Twelve longitudinal wires, 0.55 inch in diameter and spaced equally around the walls, were stressed to 70,000 pounds per square inch. Plastic flow in the wires cut the stress by 20,000 pounds per square inch and resulted in a 55 psi compressive stress in the concrete.

For circumferential stressing #6 gauge wire was used with an ultimate strength of 220,000 psi, and a yield point of 175,000 psi. The wire was spread at 0.3-inch intervals on the flange and 0.6-inch intervals on the barrel. The load applied was 150,000 psi producing a compressive stress of 725 psi. The 50 psi internal hydrostatic pressure reduces this concrete stress by 412 psi. Plastic flow and other causes produced a net 108 psi in the concrete.

The pipe was used to extend the intake of the water works 2,000 feet further in the river to take water from the main body of the St. Lawrence, a supply of higher quality than the old.

A typical prefabricated home in Sweden. It has a full basement. Similar homes are being built for export purposes.

(Part I of a Two Part Article)

By DONALD MONSON
Senior Architectural Planner
and
ASTRID MONSON
Senior Economist
Detroit City Plan Commission

IDEAS from SWEDEN

FOR AN AMERICAN CO-OPERATIVE HOUSING PROGRAM

ON AUGUST 6, 1948, the Eightieth Congress passed a minor amendment to Section 207(c) of the National Housing Act, which provided 90% mortgage insurance on 40-year, 4% loans to non-profit co-operative housing associations.* In the case of veterans' co-ops, 95% loans were authorized. Thus for the first time the way has been opened for the development of a technique of home building which, in many countries, has been the solution for the housing needs of the bulk of families in the lower-middle income brackets.

No claims should be made that co-operative housing can meet the needs of the lowest-20% income groups, who can secure minimum standards of housing decency only through a publicly subsidized housing program. But the family in the $2,500- to $4,000 income bracket—too rich to be eligible for public housing but too poor to afford the $100 to $125 monthly rentals or the $10,000 to $15,000 price tags demanded by private speculative builders—can now look for action to meet its needs. Since this bracket includes the bulk of organized labor and the vast majority of our 10,000,000 veterans, the possibilities for the growth of the co-operative housing movement are almost limitless.

The policies and procedures by which Congress' intent is to be implemented are just now being worked out by the FHA. In this country we have had little experience on which to base such a program. We have had a few successful projects—notably Amalgamated Homes in New York City—a few unsuccessful ones, and many that never progressed beyond the embryo stage. Since World War II, there has been a new upsurge of interest on the part of labor, veteran, and consumer groups in the possibilities of co-operative housing construction and ownership, in terms both of lower costs and of the amenities and social benefits possible through group planning and management. Last summer Herbert U. Nelson, executive vice-president of the National Association of Real Estate Boards, and Herman T. Stichman, Housing Commissioner of New York State and, before November 2, slated to be Mr. Dewey's national housing administrator, visited such European countries as Sweden, Denmark, Holland, and England to study their co-operative housing movements and the general housing policies and programs of their governments. Their reports have received wide publicity and have aroused much interest on the part of real estate and builders' organizations, who see in co-operative housing a possible substitute for a public housing program. The writers also visited these countries and submit herewith their observations, with particular reference to the question, "What should be the proper role of government in relation to housing co-operatives?" Because of space limitations, this article is based upon the Swedish situation only, although Holland and Denmark, as well as England, have had a long and successful experience in this type of housing.

The first Swedish co-operative housing associations were organized in the 1880's. After World War I, a severe housing shortage and the termination of rent controls gave tremendous impetus to the movement. *Hyregästernas Sparkasse och Byggnads förening* (Tenants' Savings and Building Society), the great central co-op housing society, was founded in 1923 and now has as members 55,000 families in 631 co-operative housing projects in 135 cities and towns throughout Sweden. Since

* For information on these new provisions, see "The Financing and Development of Cooperative Housing Projects Under FHA Mortgage Insurance—Questions and Answers," published by the Housing and Home Finance Agency in January 1949.

The seven-point program by which Swedish housing has been stimulated will be described in detail in the concluding article, together with recommendations for future aids to co-operatives in this country.

1939 this society alone has built 25,000 dwelling units, representing over 12% of all urban home building in the country. When it is remembered that the urban population of Sweden in 1948 was 3,785,000—or, roughly, the population of Chicago—the importance of the nearly 7,000 dwelling units built by HSB in 1948 can be compared with the total of 5,500 dwelling units started in Chicago during the same year.

In addition to HSB, there are a number of smaller co-operative housing associations, of which the largest is the *Svenska Riksbyggan* (Swedish National Builders), the building trades workers' own co-operative building organization, which was started in 1941 to combat unemployment in the building trades and has built over 15,000 dwelling units to date. With some smaller groups, these two associations are building each year about 20% of Sweden's total production of 45,000 dwelling units. In addition, HSB is producing thousands of pre-fabricated houses for various municipalities and, with SR, has formed special joint municipal co-operative boards in 40 cities.

This development was built by the building trades workers' own company, "Riksbyggan," for co-operative occupancy. The project was started in 1941 to combat unemployment in the building trades.

Organization of Co-operative Associations

The essential characteristic of all the Swedish associations is ownership and control by the member-tenants. HSB and SR, though quite different in origin, have evolved similar forms of organization. HSB was originally started by consumers needing housing, while SR was organized by building-trades workers who wanted jobs. In both cases, however, the functions performed are determined by the social and economic demands of the situation, and government policies and controls have to a large extent caused their present development to take similar forms.

HSB is organized on three levels—"daughter" societies, which own and operate a single project or development; "parent" societies, which initiate projects and perform certain bookkeeping, banking, purchasing, and supervisory functions for their offspring; and the "national" office, which performs architectural, engineering, and financing functions and operates the various business enterprises — banking, materials manufacture, prefabrication, and architectural and town planning consultation to municipalities, among others—for the society. Each member of a daughter society is automatically a member of the parent society and votes for the Board of Directors of both. The parent society names one of the five members of each daughter society's Board of Directors. It also elects delegates to the national society's congress, which in turn elects a seventeen-member administrative council and a five-man full-time board of directors to carry on the business of the organization. The magnitude of that business can be seen from the fact that there are some 600 employees—architects, town planners, engineers, accountants, publicity and promotion workers, etc.—in the organization's central office alone.

Svenska Riksbyggan was founded in 1941 to combat the unemployment in the building trades which resulted from the refusal of private speculative builders to risk their capital in the uncertain war situation. It was able to take advantage of the 95% loan provisions to co-operatives established by the government in that year. As in the case of HSB, its members invest 5% in the form of share capital and operate and manage their projects as they see fit. Any building profits earned are rebated to the tenants (not the building-trades workers!) and if, after a contract is made, building costs go down, the price to the members is reduced accordingly. The actual construction work is done by a separate organization, the Workers' Unions Building Enterprises, which operates as a general contractor. Advantages to the building-trades workers have included year-round work and higher annual wages. Like HSB, SR has a national office and local societies in various towns.

In 1948, to take advantage of the new 100% financing provisions set up by

Another co-operative, built by the "KF," co-operative wholesale food distributing organization, for the workers in its pottery plant near Stockholm.

the government for special quasi-public corporations meeting certain requirements, a corporation was set up whose five-member board of directors included two representatives of the City of Stockholm—the Socialist president of the city government and a woman attorney from the opposition Liberal Party; one representative each from the Stockholm SR and the national SR; and the vice-president of the national LO, the Conference of Labor. This organization can build housing without requiring down payments or share capital and can thus meet the needs of the low-income-bracket groups, and is typical of the "joint" form of municipal-co-operative housing associations which exist in 40 cities throughout Sweden and which are expected to build the bulk of the country's housing during the next few years.

This shows a living room interior in a co-op constructed cottage.

Government Aids to Housing Co-operatives

Swedish co-operative housing assotions under conditions of post-war inflation receive various government aids, without which they could not operate. In many cases, however, these aids are equally available to private builders, and represent temporary aids for the purpose of combating inflation. Other aids are given to families as part of the country's general social welfare and population policy rather than to the housing co-ops as such.

Where the Municipality Fits In

During the past two years Sweden has made great changes in its national housing policy and in the aids given by the government to various types of housing. A number of "reform" measures previously relied upon to meet the needs of special groups—old-age pensioners, large ("child-rich") families, single working women, and others—have been abandoned in favor of a comprehensive policy designed to stimulate housing production generally. This has led to a division of responsibility as follows:

- Each municipality with a population over 10,000 is required to study the needs of its population, in terms of population growth, family size, income, and type of housing needed, and make a plan for meeting the housing needs of all its people within 10 years.
- The state government is responsible for allocating available manpower and material to each municipality in terms of its needs, and for providing financing methods and credit to get the job done.
- Private speculative builders are allowed a certain percentage of total home production to build for the upper-income groups.
- The co-operatives are also allotted a certain amount of labor and materials and build housing for all other groups who can afford as much as a 5% down payment in the form of share-capital investments.
- The municipalities — often in the form of quasi-public joint municipal-co-operative bodies—build all remaining housing, thus meeting the needs of all families who cannot afford down payments or who prefer ordinary rental housing to the obligations of co-operative membership.

During the past year and at the present time the greatest emphasis is being placed upon the municipally controlled corporations set up jointly by the municipality and a housing co-operative. The majority of the Board of Directors of such a corporation are appointed by the municipality. It is required to be non-profit, can demand no down payments or share-capital investment, and is eligible for the same credit aids (notably 100% loans) as a regular municipal housing agency.

Housing of this type is often designed and built under HSB or SR supervision. The co-operative may do the architectural and engineering work. The construction is done by private contractors, who may be hired either by the co-operative or by the municipality. Management is in the hands of the joint board of directors. Earlier, a similar arrangement involved HSB's building 5,400 dwelling units for large families in special projects, which were turned over after their completion to special bodies set up jointly by HSB and the city.

In all cases, however — whether the housing is owned by the co-operative, or by a municipally controlled joint corporation—the granting of state loans is dependent upon state approval of the plans and specifications, economical construction methods, carefully figured cost estimates, financing and rent schedules, and low land costs. Since 90% of all housing is now dependent upon state financing, the government virtually controls housing standards.

The following types of help are currently available to the various kinds of housing indicated:

	Available to		*Municipalities*
	Private builders	*Co-operatives*	*or joint city co-op. bodies*
1. Third-mortgage government loans			
a. Up to 85% and 90%	√		
b. Up to 95%		√	
c. Up to 100%			√
2. Guarantees against rise in interest rates	√	√	√
3. Supplementary loans (capital subsidies)	√	√	√
4. Preference in materials and labor allocations		√	√
5. Family rent subsidies	√	√	√
6. Special municipal subsidies			√
7. Rental of land from public reserves	√	√	√

In Sweden no tax exemptions are given to co-operatives or other types of housing enterprise.

(To be concluded in the April issue)

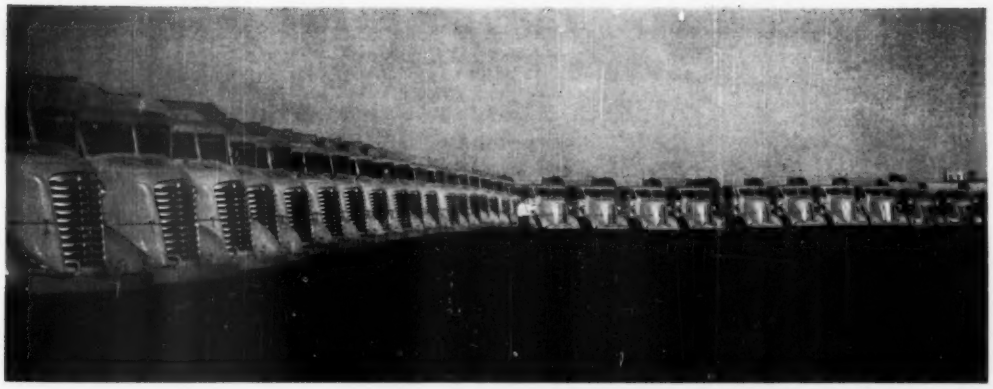


PHOTO COURTESY OF THE MILWAUKEE JOURNAL

Some of the GMC trucks with Heil refuse bodies purchased under the Milwaukee specifications.

How Milwaukee Bought 46 Garbage Trucks

By **JOSEPH W. NICHOLSON**
City Purchasing Agent and Secretary
Central Board of Purchases
Milwaukee, Wis.

A CERTAIN County Highway Commissioner, when asked about the purchase of trucks by specifications, answered: "We buy trucks on specifications only. It hasn't been the custom to ask for bids." To most purchasing agents, buying on specifications means using specifications in requesting bids, so that competition can be obtained. The statement that it has not been the custom to ask for bids means simply that whoever bought these trucks apparently selected the ones he wanted and paid the price asked out of the public treasury. Perhaps the specifications he refers to are those of that particular make of truck which he purchased.

Specifications Used for Bids

In contrast, I can furnish specifications which were used in obtaining bids for 46 garbage-truck chassis and 46 garbage-packing bodies for these trucks, specifications for a 750-gpm and a 1,000-gpm fire pumping engine, specifications for a motor-truck chassis for a combination police patrol and ambulance, specifications for a body to be built and mounted thereon, specifications for four-wheel-drive motor-truck chassis to be used in connection with a first-aid, rescue-squad type body, specifications for the special body for this chassis, and specifications for motor oil purchased in car lots.

Concerning the garbage-packing units, the specifications and bids were divided into two parts, one for the truck chassis and the other for the garbage-packing bodies. These specifications describe in detail what is wanted in such terms as to invite competitive bidding.

In addition to the foregoing body specifications there are specifications describing the method of tests to be conducted of the equipment offered prior to awarding the contract. As this is complicated equipment, the procedure used in its purchase should be of interest. The following three considerations were involved.

1. Mobile packing units have been built for so short a time that there is still a great deal of room for improvement in the mechanism employed. Open specifications must be used to take advantage of current improvements.

2. The procedure for making tests must be spelled out in detail in the specifications.

3. Comparative field tests are needed to assure the purchaser of receiving equipment which will economically accomplish his purpose and will also represent the best value for his dollar.

Briefly, the procedure of making this purchase was as follows: Bid requests for the truck chassis were advertised and copies of specifications and bid forms were sent to qualified bidders. The same thing was done with manufacturers of garbage-packing bodies. When the formal sealed bids had been opened publicly at the stated time and tabulated, they were examined by our engineers and tests were conducted. Upon receipt of data from our engineers as to performance in the field, the award was made to the lowest responsible bidder for the truck chassis and for the garbage-packing bodies. The purchase cost was $2,357.50 for each body and $4,544.12 for each chassis, or a total of $6,901.62 for a complete unit, making a total cost of $108,445 for 46 bodies and $207,499.52 for 46 chassis, or a grand total of $315,944.52 for the units. The chassis are GMC cab-over-body units. The truck bodies are Heil Company makes with compactor units in them.

This represents a purchase on the basis recommended by those public purchasing officials who know the value of full competitive bids, and who also know that it is possible to purchase specialized, complicated equipment on bids.

Citizen Volunteers Build Airport

Local "Booster Club" at Michigan City, Ind., promotes and finances a 150-acre airport

After a few hours' work Michigan City's budding airport looked like this from a plane. Runways were roughed in, and two long tree lines had been removed.

ANY city can have an airport.

Mayor Russell Hileman of Michigan City, Ind. (population 26,735, 1940 census), who said that, ought to know. He got what will be a $100,000 field as a 1948 Christmas present.

Michigan City's 150-acre tract was converted from undeveloped farm land into a usable field in two Saturdays. Roughly 500 volunteers and 100 pieces of heavy equipment did the trick at no cost to taxpayers.

When, in early 1948, aviation enthusiasts tried to secure a $60,000 bond issue to finance an airport, the move was blocked. The Civil Aeronautics Association's matching $40,000 was apparently lost.

Airport Boosters Club

But a group of determined citizens refused to accept defeat. They organized a "Boosters Club," formed a nonprofit corporation to sell $35,000 in stock to farms and individuals, and bought the airport site with the money. They will re-sell it to the city, with no interest charges, over a seven-year period at $5,000 annually. The money will come from the city's aviation fund, for which a 2-cent levy, which won't be increased, already existed.

Boosters also offered to put the proposed airport in usable shape. They made it "usable" with less than 16 hours of work.

City officers eagerly grabbed the offer. They conferred with state taxboard officials and with Attorney General Cleon H. Foust to be certain the irregular procedure would be legal. By the time the legal snarls were unraveled, plans were well advanced.

Ralph Surface, works manager at a Michigan City factory, was named boss of the airport project by Booster President M. B. Wilson. Mr. Surface immediately studied the field layout with Col. C. W. Cornish, director of the Indiana Aeronautics Commission.

Work Schedule

Putting the field into "usable" shape meant clearing 350 trees in two long tree lines, some grading and leveling, and seeding the first of two runways, 500 feet long and 2,500 feet wide. Originally only the north-south runway was to be put in. Boosters intended to do all this in one week-end with volunteer labor and machinery.

Volunteers showed a real willingness to help. One communication problem was solved when a taxicab company offered to put radio-equipped "messenger" taxis on the field and one at headquarters. Instructions could be relayed easily and supervisors could have excellent control.

A large field tent was procured to serve as a headquarters. There all

Airport bosses relay orders via two-way transmitter in car of Engineer L. Brown. At right is planner, R. Surface, and in front of him, Booster Boss M. B. Wilson.

workers would register in and out and the same policy would be followed with equipment. Every man and machine hour had to be recorded and figured out in terms of dollars. When the request for a "matching fund" is made to Uncle Sam there will be notarized reports to back up the amount reported spent in building the field.

Restaurant owners put up a second tent as a field kitchen. Workers were served there or hot food carried to them. Doctors and an ambulance were lined up to be on hand. One Michigan City insurance firm volunteered to underwrite every worker for insurance against injuries.

Five days before "Dig-Day" (December 4), Mr. Surface was told cautiously that he could expect 30 pieces of heavy equipment and perhaps 150 to 200 volunteer laborers. Instead, over 500 people reported and worked! They came from 50 miles around, many of them bringing their own equipment. The anticipated 30 pieces of equipment multiplied into more than 100 before the day ended.

Thick Tree Line Wiped Out

At the start, crews set to work wiping out the thick tree line which ranged down the proposed north-south runway. With bulldozers and dynamite, the trees came out quickly. As they were knocked down and uprooted, heavy cranes hoisted and lugged them to a central cutting crew. There, with axes and power saws, men cut the trees to logs, stumps, and brush.

Bulldozers and two State Highway Department graders, obtained for the project by Governor Ralph Gates, moved in and began grading runways. They cut two feet from the crown of a slight hill at the intersection point of the proposed runways.

When dark finally called a halt to the first day's work, Boosters surveyed the results and found they had completed three-quarters of the work.

Albert W. Spiers, Jr., newspaper editor and president of the Pilots Association, flew the first plane—a BT-13—onto the field at the end of the second day with Booster President M. B. Wilson as a passenger. The craft was greeted by Mayor Hileman and his staff, who officially accepted the field from the Boosters at that time.

Simplified Traffic Planning Procedures For Small Cities

By WILLIAM S. BONNER
Research Assistant
Institute of Community Development
University of Oklahoma

METHODS for making basic planning surveys in small municipalities that untrained personnel can understand and use are being worked out in cooperation with several small cities by the Institute of Community Development at the University of Oklahoma. The purpose of the Institute, created in July 1945, is to assist local communities in community planning and organization. This program is carried on in cooperation with the Oklahoma Planning and Resources Board.

The work of the Institute with local communities has been centered mainly on cities with less than 25,000 population. Two distinct but related services are offered:

1. *The preparation of a basic resource inventory.* This involves the compilation of an analysis of the physical, social, economic, and government resources of the community. Attention is given to the role that various forces have played in the historical development of the community.

2. *Assistance in the field of planning and zoning.* The Institute aids in the establishment of planning commissions, the preparation of zoning ordinances, the making of basic planning surveys, and in the preparation of future plans. The Institute works with the community; it does not do the work for it.

One of the problems the Institute has had to face is that nearly all the available literature on survey methods has been aimed at the large city with competent trained personnel. These methods are generally complicated and make the job of attacking the relatively simple problems of a small city appear quite difficult. Thus the Institute has been interested in developing simple methods for carrying on basic planning surveys in small Oklahoma cities.

The Case of Norman, Okla.

During the first five months of 1948, the Institute had the opportunity to work with the Norman (Okla.) City Planning Commission (1940 population, 11,429) on a number of basic planning surveys. The basic traffic-planning survey offered an excellent opportunity to work on both the simplification of the survey and the procedures used. It is generally recommended in making a basic traffic-planning survey that five individual and separate surveys be undertaken. These surveys are a motor-vehicle-volume count, cordon count, origin-and-destination count, a major-route-congestion survey, and a street and off-street parking survey.

In the case of Norman, only two surveys were actually made—the motor-vehicle-volume survey and the parking survey. Through careful preparation and execution of the motor-vehicle-volume survey, it was possible to eliminate the other three counts. No special cordon count was necessary, as traffic entering and leaving Norman at its limits was determined from the volume count. From the traffic-flow map prepared from the volume count, it was possible to determine quite accurately the origin and the destination of Norman's traffic.

Norman has two major destination points, the University campus and its adjacent business district, and the Main Street business district. The traffic-volume-flow map also showed the internal origin of traffic by areas. An analysis of the cordon counts indicated that approximately a thousand motor vehicles from Oklahoma City and vicinity had Norman, especially the University, as their destination. Route congestion was easily determined from volume flow, knowledge of existing street widths, and street-parking conditions. It was possible from the motor vehicle volume count to secure enough factual data on traffic conditions in Norman to take sound steps in alleviating unsatisfactory traffic conditions and to begin work on a long-range master street plan.

Volunteers Used for Count

In addition to simplifying the survey itself, the Institute worked out a simplified procedure for making an actual traffic-volume count. This procedure involves eight separate steps:

1. Preliminary organization
2. Recruiting of personnel
3. Selection of traffic-count stations
4. Preparation of forms
5. Briefing of personnel
6. The actual count
7. Tabulation of results
8. Presentation of results

While this simplified procedure has not been tried by the Institute in another city, it worked successfully with untrained volunteers in Norman.

The willingness of small cities to undertake a planning program can certainly be enhanced by the simplification of the surveys and survey procedures. It makes it possible for the small city to gather much-needed data. With these data at hand, city officials can do more than take the usual day-by-day remedial steps. They can plan for the actual elimination of unsatisfactory conditions and for the prevention of similar unsatisfactory conditions in the future.

Municipal **P**ublic **R**elations

The City Tells Its Story

By HENRY DAVIS NADIG, *Director of Public Relations, New York Regional Plan Association*

Practical MPR for the smaller cities

MUNICIPAL Public Relations is as feasible and essential for the small city as for the large. Indeed it can be as economical and may tend to be more immediately rewarding in accomplishment where skillfully applied in smaller municipalities.

That MPR is only for the big city (a viewpoint I've heard expressed on some occasions) seems to me to be a fallacious idea. What is already being done in the various MPR media in many small cities is sufficient to show the practicality and the wisdom of concerted official effort in utilizing public relations tools.

MEASURE OF MPR

Municipal size ought not to be a factor in determining whether or not you need or should adopt certain public relations or information techniques. The most significant factors are public opinion and official action. And the degree with which these two coincide is the measure of MPR lack or supply.

Basically, therefore, it is not a question of whether you can afford to arrive at a concept, set a policy and carry out a program of Municipal Public Relations: it is, rather, a question of whether you can afford *not* to as a matter of both simple expediency and long-range gain in the democratic and efficient management of your local government.

That holds for any and all sizes and types of municipal government. For, as pointed out by examples in this column from time to time during the past two years, even quite small municipal governments are employing what MPR techniques they can in those cases where their value is recognized.* And the types of government using one or more techniques or media range from the village and borough on through the different forms of city operation—with the city-manager municipalities doing about the most effective work.

ROYAL OAK'S MPR

This brings us to Royal Oak, Mich., a city with a population of 35,319, according to the special federal census of 1947, and where James G. Matthews is handling MPR. Mr. Matthews has a civil-service classification as Municipal Research Analyst and he's been in municipal work for 25 years come May.

He writes that his assignments originate in the City Commission or in the office of the City Manager, under whose direction he works. He describes his duties as "those of a research worker, administrative assistant, and public relations man."

PUBLIC KEPT INFORMED

Royal Oak has a commission-manager form of government, adopted in 1921, and the legislative body includes a mayor and six commissioners elected by the city at large on a non-partisan ticket for a two-year term.

Mr. Matthews says that local newspaper reporters are present at all meetings of the City Commission, "giving the public accurate and fairly complete reports of Commission proceedings." A representative of the local daily contacts the City Manager almost every day for news and "there has been a fine spirit of cooperation displayed by the newspaper management and the city administration."

He adds that this description of the press phase of MPR work for Royal Oak "has not always been obtained in case of the metropolitan dailies published in Detroit."

But apparently Mr. Matthews has not been idle in trying to overcome this, for he goes on:

PRESS COOPERATES

"However, a careful watch of these newspapers for articles not representing our city fairly, and subsequent attempts by this office to supply editors with information, has virtually eliminated the careless attitude once displayed by metropolitan newspaper reporters. We have found that the management of the papers is willing to cooperate."

The Royal Oak MPR tries to be alert to every public expression regarding municipal activities and administrative affairs.

"It is our policy to go out of the way to supply correct information to local citizens even when an indignant individual may excoriate us," he writes.

COURTESY IMPORTANT IN CORRESPONDENCE

When letters of criticism are received they are dealt with as if they were helpful suggestions. Explanation is offered where needed and thanks are given for the "display of deep interest in municipal affairs."

Annually the city publishes a tax folder prepared by the MPR office and usually sent in June to all citizens whose names appear on the Water Department mailing list. It goes out *in advance* of city and school tax statements.

TAX FOLDER USED IN SCHOOLS

About 9,500 copies of the 1948-49 tax folder were mailed last summer, and this winter it is being used as classroom material in the junior and senior high schools. Mr. Matthews says it is also very popular with public administrators. Requests for copies have been received from South Africa, Australia, New Zealand, Mexico, and other remote places, the MPRO says.

"Royal Oak Facts" is another book-

Cover of Royal Oak, Mich., tax folder.

* For some previous items on MPR usage in small municipalities, see the following installments of *The City Tells Its Story:* August and November 1947, and April 1948.

let emanating from the MPR office and first brought out in 1945 to give information on practically every phase of community life in the city. A 12-page, 5½-by-8½ printed booklet, it has information arranged in convenient alphabetical order. Last year the local Chamber of Commerce asked for a revision of the 1945 edition, offering to pay half the printing cost. The MPR office made the revision, photographed local scenes for illustrations, redesigned the booklet for publication. This informative brochure is also used in the schools.

MUNICIPAL NEWSPAPER POPULAR

A leaflet of the same size, but four pages offset, is *Municipal News*, which Mr. Matthews says "we are trying to publish monthly." He points out that there is no effort here to compete with local newspapers, the intent being to publish articles of more intimate nature than carried by the press.

Showing how well the Royal Oak MPRO has cemented his relations with the schools, is the fact that a school administrator has asked to have 300 copies of each issue placed in the hands of school teachers for their own information and as potential classroom material. Municipal employees also receive copies of *Municipal News*, which has an edition of 1,500.

DIVERSITY OF SUBJECT MATTER

A typical issue of the monthly city news sheet is that of October 1948, which features a story on the long service of an employee in the Department of Engineering and some tips on courtesy in driving by a police lieutenant. Inside are stories on sewers, fire protection, and debt reduction, while an excellent piece on the public library occupies the back page.

Royal Oak also publishes *A Directory of Royal Oak Organizations*, listing all local organizations with names, addresses, and telephone numbers of presidents and secretaries, when and where the organizations meet and other data on each group. "It is in considerable demand and is a good-will builder," comments the MPRO.

Query: How many cities of the size of Royal Oak or larger can you name that are doing, from City Hall, as much as this energetic, MPR-conscious Michigan city?

Employee relations with the public

We are indebted to the Management Information Service of the International City Managers' Association for two excellent paragraphs from MIS Report No. 60, "Methods of Keeping City Employees Informed."

One of the most important jobs of the MPR man is in that branch of his work dealing with municipal employees. Working under the City Manager, he should be able to provide a great deal in the way of personal contact with employees, in conducting or assisting in the conduct of in-service training courses on methods of meeting and dealing with the public, in handling or working with employees, in producing an employee paper, in getting out manuals and handbooks, in relations with the press and radio, and in connection with employee organizations and meetings.

MUNICIPAL NEWS

VOL. III — ROYAL OAK, MICHIGAN — OCTOBER, 1948 — NO. 9

TIP YOUR OWN HAT GEISTER SAYS

OUR'S A BETTER CITY BECAUSE HE SERVED

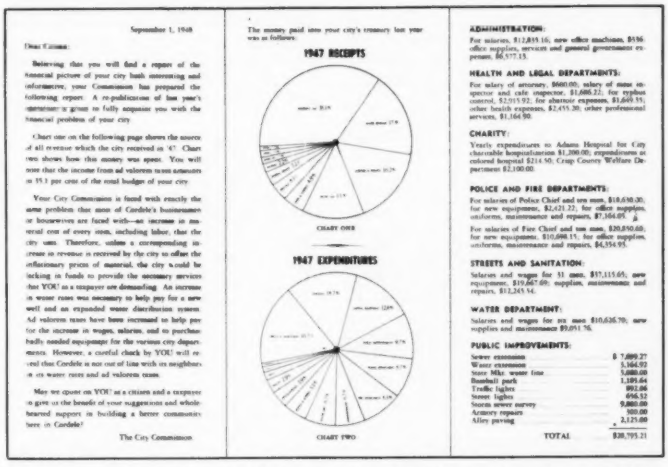
Page one of Royal Oak, Mich., city hall news sheet. It contains news of both immediate and long-range interest to citizen and municipal employee.

Says MIS:

"An important field of in-service training is that of training public contact employees in public relations. One type of training would apply to inspectors, meter readers, visiting nurses, and other employees who contact citizens at their homes or places of business. Another type of training would be given employees who meet citizens who come to the City Hall to apply for licenses or pay their utility bills or taxes. Still another type of training would be given employees receiving complaints over the telephone or in the daily mail. The training of city employees in tact, courtesy, and promptness in handling the public is itself an important task.

MANY MATERIALS AVAILABLE

"The job of informing employees on public relations training consists of preparing or securing material useful in answering questions most likely to be asked, keeping employees posted regarding changes in municipal policies, and informing employees on how to handle questions and complaints over the desk. Booklets and films are available, for example, from the telephone company for use in training in telephone contacts. Information is also available on training employees in improving correspondence methods and in relations with the press. Employees also should be informed on what to do with information they receive from the public, what to refer to other employees, and to whom to refer it. Employees can be informed of these matters through lectures, films, demonstrations, supervised practice, and use of the conference method as well as manuals and guides."



September 1, 1948

Dear Citizen:

Believing that you will find a report of the financial picture of your city both interesting and informative, your Commission has prepared the following report. A re-publication of last year's statement is given to fully acquaint you with the financial problem of city.

Chart one on the following page shows the source of all revenue which the city received in 1947. Chart two shows how this money was spent. You will note that the income from ad valorem taxes amounts to 35.1 per cent of the total budget of your city.

Your City Commission is faced with exactly the same problem that some of Cordele's businessmen or housewives are faced with—an increase in material cost of every item, including labor, that the city uses. Therefore, unless a corresponding increase in revenue is received by the city to offset the inflationary prices of material, the city would be forcing it funds to provide the necessary services that YOU as a taxpayer are demanding. An increase in water rates was necessary to help pay for a new well and an expanded water distribution system. Ad valorem taxes have been increased to help pay for the increase in wages, salaries, and to purchase badly needed equipment for the various city departments. However, a careful check by YOU will reveal that Cordele is not out of line with its neighbors in its water rates and ad valorem taxes.

May we count on YOU as a citizen and a taxpayer to give us the benefit of your suggestions and wholehearted support in building a better community here in Cordele!

The City Commission

The money paid into your city's treasury last year was as follows:

1947 RECEIPTS

CHART ONE

1947 EXPENDITURES

CHART TWO

ADMINISTRATION:

For salaries, $12,855.16; new office machines, $936; office supplies, services and general government expenses, $6,577.15.

HEALTH AND LEGAL DEPARTMENTS:

For salary of attorney, $660.00; salary of state inspector and cafe inspector, $1,086.22; for typhus control, $2,015.92; for obstetric expenses, $1,669.55; other health expenses, $2,455.20; other professional services, $1,164.90.

CHARITY:

Yearly expenditures to Adams Hospital for City charitable hospitalization $1,200.00; expenditures at colored hospital $214.50; Crisp County Welfare Department $2,100.00.

POLICE AND FIRE DEPARTMENTS:

For salaries of Police Chief and ten men, $18,630.30; for new equipment, $2,421.22; for office supplies, uniforms, maintenance and repairs, $7,164.05.

For salaries of Fire Chief and ten men, $20,850.60; for new equipment, $10,088.15; for other supplies, uniforms, maintenance and repairs, $4,354.95.

STREETS AND SANITATION:

Salaries and wages for 11 men, $17,115.65; new equipment, $19,667.69; supplies, maintenance and repairs, $12,243.54.

WATER DEPARTMENT:

Salaries and wages for six men $10,636.70; new supplies and maintenance $9,091.78.

PUBLIC IMPROVEMENTS:

Sewer extension	$ 7,699.27
Water extension	5,364.92
State Hwy. water line	5,000.00
Bumbell park	1,389.64
Traffic lights	892.06
Sewer lights	696.52
Storm sewer survey	9,000.00
Armory repairs	500.00
Alley paving	2,125.00
TOTAL	$30,795.21

Inside pages of simple tax folder put out by Cordele, Ga. (population 7,929).

Lee's Summit Reaches for Water

A seven-mile pipeline prevents a water crisis in this small Missouri city

By ROBERT L. BROWN
Black and Veatch
Consulting Engineers
Kansas City, Mo.

FOR many years the small city of Lee's Summit, Mo. (1940 census—2,263), has had a public water supply, but more and more frequently the dry summer months curtailed first street cleaning, then lawn sprinkling, and, during 1946 and 1947, even drinking water to an extent. A "coke at the fountain" was a rare luxury, and water was shipped in by tank car from Kansas City, some 23 miles distant, at a freight cost of $12.33 per 1,000 gallons.

Lee's Summit, as the name implies, is a high point, and drainage from the city extends in three directions.

The original water supply was from near-by wells, but these in time dried up. Then the city laid a 6-inch main some 19,000 feet to connect to the system of the Independence, Mo., Water Company. The water company services began to expand, and the quantity reaching Lee's Summit dwindled away during the daylight hours. In 1934 a million-gallon covered clear-water reservoir at the north edge of the town was completed by the PWA, and a small open reservoir abandoned. This arrangement served for a few more years. Then the war caused an influx of war workers and the reservoir could not catch up enough at night to meet the daytime needs. So a small 4-inch connection was run to Public Water Supply District #4, which purchased water from Public W. S. District #2, which in turn purchased water from Kansas City, Mo. The Independence Water Company also buys all of its water from Kansas City.

In 1945, Black & Veatch made a water study for Lee's Summit and recommended a direct 10-inch pipeline connection to Kansas City, with a small booster-pump station and metering station at the city limits, at an estimated cost of $209,000. The State Geologist's local representative did not agree with the report and suggested wells in the Blue River valley north of the city.

In 1946, some $3,000 worth of test wells were drilled and a yield of about 10 to 20 gpm indicated. Meanwhile, the citizens began to press for adequate water, and a contract was finally negotiated with Kansas City to purchase water at the city limits as recommended in the report.

Work Started in 1947

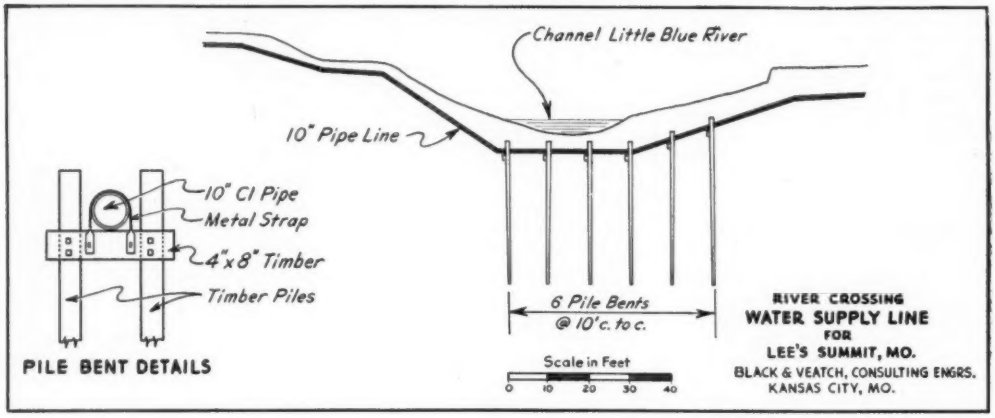
Early in 1947, the city awarded the contract for the 10-inch cast iron pipe and fittings to the U. S. Pipe and Foundry, National Cast Iron Pipe, and American Cast Iron Pipe in about equal quantities by weight. There were 36,500 feet of Class 150 and 16,040 feet of Class 250 mechanical-joint cement-lined pipe. At scheduled arrival time, a contract was awarded to Tetyak & Young of Kansas City for the installation of pipe and construction of the booster-pump station. The mechanical-joint pipe permitted the fixing of one joint on the bank. The two lengths were then lowered into place with slings. The only poured-lead joints were where special fittings were required. One major stream crossing—Blue River—was made on pile-supported bents laid 3 feet below the stream channel. The laying contractor made very good time and on his maximum day laid 2,000 feet of pipe. There were nine highway crossings and two railroad crossings made by driving a corrugated pipe conduit through, and then snaking the cast iron pipe through the conduit.

Caterpillar tractor with Trackson side boom lowers mechanical-joint pipe.

The Blue River crossing is at such a low elevation that Class 250 pipe had to be used for several miles in this vicinity and special construction was necessary to support the pipe.

During portions of the year the Kansas City pressure is sufficient to flow satisfactory quantities through the line and the pumps are not operated. They are started manually, and, as the reservoir in Lee's Summit fills, a float valve closes and the pressure rises until the shut-off head is reached and actuates a pump cut-off device.

The pipe-laying contract was for



$1.31 per linear foot and rock extra at $9.00 per cubic yard in trench. Total construction cost was $246,000. The first water from the new line arrived in time for a city celebration in the fall of 1947, although final construction was not completed until December. The project cost was financed by the sale of $100,000 general-obligation bonds of the city and $150,000 revenue-secured bonds.

The contract between Kansas City and Lee's Summit provides that Kansas City prescribe the rate of delivery to not over 300,000 gpd and not over 10,000,000 gallons in any one month to the Lee's Summit meter, and Lee's Summit agrees to serve no customer beyond a designated area and to sell to no one for resale to other customers. The contract is for 20 years from June 1, 1947, and all water must be purchased from Kansas City except when Kansas City cannot supply the demand. A service charge of $200 per month is made by Kansas City, and the rates are 25 cents per 100 cubic feet for the first 6,000 cubic feet, then 18 cents per 100 for the next 54,000 cubic feet, and all over 60,000 cubic feet is at 9 cents per 100. The Lee's Summit city rate for water is now $1.50 for the first 1,000 gallons minimum, and then 50 cents for the next 10,000 gallons, and reducing to 40 cents, 35 cents, 32 cents, and 30 cents for each successive 10,000 gallons. All over 51,000 gallons cost 28 cents per 1,000. Suburban minimum is $2 for 1,500 gallons, with the next 2,000 gallons at $1; next 2,000 at 80 cents, etc. The water department has 867 services as of July 1948. The repumping plant at Kansas City limits has been in service only a few months during the past year.

Since the direct purchasing of the Kansas City water in October 1947, the city-purchased water and sales have shown a marked increase.

Municipal Research Service for Small Cities

An opportunity for state-supported educational institutions and state leagues of municipalities

By WALTER J. MILLARD

IN THIS country two agencies deserve much of the credit for the substantial improvements made during the last three decades in the field of local government. These are the council-manager plan and the Bureau of Municipal Research. The public has heard a great deal about the first, but not enough about the second. Yet, such bureaus, by their quiet methods, have obtained much more service from the citizens' tax dollars than might otherwise have been possible, and this even in cities with relatively poor forms of government and with officials of the "spoils and patronage" type.

Because it has been only in large cities that the voluntary financial support was usually available upon which such bureaus must depend, their salutary effects have been confined in the main to cities of the metropolitan type. Nevertheless, small cities are as much or more in need of the services of the municipal researcher. The basic principle which underlies such research is the same whatever the size of the community. It relies, as does all science, on applying quantitative measurements to objects and processes which have common qualities. The units of measurement are arbitrary but have nevertheless achieved common acceptance in related fields. A unit such as "per capita cost" is one.

How Students Can Help

In some of our states, particularly those in which cities can legally pay for membership in a state league of municipalities, the practice is growing of locating the office of the league in a state-supported educational institution, such as a state university. One good result, then, is that the students taking courses in citizenship and government can be brought into close contact with local governmental officials, active in the league, when they visit its headquarters.

An equally valuable result, and one deserving wider encouragement, is that the students when on visits to their homes can obtain at city halls the data from which comparative tables are constructed showing "per capita costs," and by other means compare each important service carried on in each city in that state. Simple tables thus obtained have many values for citizens of small cities. For one thing, in the formation of opinion concerning the competence of local officials, the citizen of a small city has something to rely upon other than what an official says about himself when running for re-election, or what rumor, hearsay, and gossip says about him.

Though such service cannot go far, it increases the demand for more of the same kind, and even for the help of competent researchers who can give objective judgments on special local problems. Such specialists can be provided by the staff of the league of municipalities and by the faculties of the institution where the league office is. These in turn know what "outsiders" should be called in on occasion.

It is the invariable rule that those who can render municipal research to small cities within the state that pays their salary as an educator must never "push" or "advertise" that fact. Therefore, it is time for dwellers in small cities to make definite calls for such services. Here the alumni of state universities can be expected to take the lead.

If it is taken for granted that a proper function of a state-supported educational institution is to measure the differences between types of cow-feed in affecting milk production, surely another proper function is to estimate the result of giving up a dollar in taxes for fire protection in one city, as compared with what protection you get for it in another city in the same state.

Dayton Is Newest Income-Tax City

DAYTON, Ohio, is the municipality most recently to adopt a municipal income tax. The ordinance passed by the Dayton City Commission will impose a levy of ½% on the earned incomes of all individuals working in Dayton, and on the incomes of professional and business firms. Collections on the tax, which is expected to raise $1,697,500 annually, are scheduled to start April 1.

Other Ohio cities with local income taxes include Columbus, Springfield, Toledo, and Youngstown. An up-to-date report on Toledo's experience with the tax, entitled "What About Toledo's Income Tax?—A New Review," by Tax Commissioner Carl Tillman, is reproduced in the January 29 issue of the *Toledo City Journal*.* Commissioner Tillman concludes:

> Toledo's income tax has not been overrated; it can be the answer for those cities really in need of additional revenues, if intelligently and equitably administered; there need be no conflict as between the city of residence and the city where income is earned, if both interested cities are willing to face the problem honestly, and there can be, should be, and really must be, uniformity in municipal income-tax laws, at least within each state.

* Published by the Commission of Publicity and Efficiency, Fire and Police Alarm Building, Toledo 2, Ohio. 10 cents per copy.

UNINCORPORATED VILLAGE builds a PARK

For the first time in Manville's history, a football game progresses on a graded and seeded field while a member of the park board prepares ground for an ornamental flower bed in the foreground. Part of ball diamond is at left.

By J. HECTOR LAROCHELLE
President, Board of Governors
Manville (R. I.) Memorial Park, Inc.

MANVILLE Memorial Park, dedicated on V-J Day 1948, is physically much like many other small-town parks, but it is unusual in origin.

The 4,000 people of Manville, R. I., take pride in its excellent athletic field; its pond, which is now a popular swimming spot; its playground apparatus for children of varied ages, and its pleasant picnic groves that comfortably accommodate about 60 persons at a time.

The granite entrance is inviting and dignified, in keeping with a memorial to the village's sons and daughters who fought and died in World War II for the sake of a safe future for those children and adults who now enjoy this recreation tract of about 40 acres.

Our pride stems, however, less from what we have in our park than from how we got it.

Manville is not a municipality. It is a one-mill textile village within the Town of Lincoln. Three urban sections of Lincoln lie from one mile to five or more miles from this northernmost community. A fifth neighborhood is rural.

These facts imply difficulties which precluded any effort to establish a park for our village solely through municipal channels. The existence of a popular state park in southern Lincoln and the absence of any town parks might well have constituted additional obstacles.

However, Manville wanted a recreational tract for its memorial to its own war veterans. Hence financial drives and benefit events that brought the vision to reality were enthusiastically undertaken and supported. A uniquely homogeneous population, largely of French-Canadian origin, put aside its usually sharp party divisions and dug generously into its collective working-class pocket.

Volunteer labor and donations of materials also helped produce a park property worth considerably more than the cash cost.

Background of Park's Development

A World War II memorial was first suggested early in 1944 by the Alphonse Yelle Post, American Legion, which called leaders of the 32 village civic and social organizations to a meeting on March 12, when a general committee was formed to promote the memorial movement.

In April, a subcommittee of 14, delegated to propose a specific memorial and steps to attain it, recommended a monument.

Assuming until early in 1946 that a monument was the goal, the World War II Memorial Fund general committee raised nearly $4,800. A carnival in June 1944 netted $2,000. The Manville Firemen's Association rang doorbells from April to October and gave the fund nearly $2,600. A carnival, sponsored by the committee in August 1945, brought in $200.

Rev. Francois R. Boudreau returned from overseas duty as an Army chaplain in March 1946, and became a curate of the Roman Catholic parish embracing Manville. Concerning himself with the welfare of youth, he quickly began a quest for adequate recreational facilities.

He was informed by Town Councilman-Highway Surveyor Adelard Beaudoin that a sportsmen's club had declined a chance to buy its leased reservation. Father Boudreau paid the owner $100 for an option to purchase that tract, at the edge of the village, for $5,000.

On May 6, 1946, the villagers at a mass meeting voted to form Memorial Park, Inc., and develop that land as a living tribute to World War II veterans of Manville.

On June 7, 1946, the Memorial Fund general committee canceled plans for a monument, gave its $4,800 to Memorial Park, Inc., and disbanded. The same summer, another carnival yielded an additional $1,000.

Later, $5,000 were received from Textron, Inc., then owners of the Manville mill, the village's sole industry; but the mill's subsequent sale and continuing non-operation cut short any expectations of further revenue from that source, and caused employment adjustments unfavorable for public donations.

Memorial Park also received appropriations from the Town of Lincoln of $1,000 in 1947, and $2,000 in 1948, toward a cash outlay to date of $31,200 for land purchase, construction, equipment and maintenance. Receipts and credits through September 1948 total $35,600.

All village residents 18 years of age or older are members of the corpora-

tion and may vote at the annual meeting which establishes broad policy. Actual administration is by a board of governors having considerable executive latitude. It consists of the Councilman from Manville as the town representative, one representative each from the church, Yelle Post, the Firemen's Association, from the two sportsmen's clubs and one social club, as well as four members at large. A Navy veteran, I was elected a governor-at-large, and was chosen president of the board, whose membership is non-partisan.

The board soon completed purchase of the rocky, marshy land, which required extensive engineering. Detailed plans were drawn by a landscape architect. A Pawtucket construction contractor granted unusually favorable terms for clearing, grading, and seeding the athletic field, a project that extended through the summer of 1946.

Volunteers Put to Good Use

Members of the politico-social Manville Roosevelt Club volunteered evening labor to remove ledge rock, and provided a granite memorial entrance after boosting to $6,000 its $400 fund originally earmarked for a servicemen's welcome-home banquet.

Considerable fill was given by a textile company in a neighboring village from its own gravel bank. A near-by state-road project yielded much additional fill. An outstanding volunteer-manpower contribution was made by one of our board members, Philippe Dupre, in bleachers construction and ornamental landscaping.

With turf not at its best and playground equipment still scarce through part of the 1947 season, reasonably full use of the park was attained only last summer.

Fees from five baseball teams in a twilight league, six in public and parochial schools' intramural leagues, a town team and the parish CYO nine gave us a net return exceeding $800. Beach, playground and picnic groves were crowded when weather conditions permitted large attendance.

Eager acceptance of the recreation our park makes available betokens a lessening in the potency of any local conditions tending toward juvenile delinquency. Vandalism at the park does not exist—we have not needed additional police. The sole theft on the premises has not been established as the work of juveniles.

Expansion Plans Under Way

Number one project in our long-range expansion and improvement plan is enlarging the beach and conditioning it to make it more attractive to adults. To implement it, we recently paid $1,000 for additional land for this and other purposes still to be determined. State lifeguards will be stationed there next year. We may also stock fish. Work on parking space has been started. Other goals include a grandstand with dressing rooms, further beautification, and perhaps a band stand, tennis courts, and trained playground leaders.

Realization of these objectives depends on continued adequate voluntary support. Our major annual fund-raising effort will be a V-J Day festival. We expect continued success because we are sure the villagers see in the park a living memorial to their war veterans, as was envisioned when Memorial Park, Inc., was formed.

State Economic Development Department Aids Local Groups

By C. DWIGHT WOOD
Chief, Area Development Division
Michigan Department of Economic Development
Lansing, Mich.

IN just 14 months of existence much has been done in area-development organization by the Michigan Department of Economic Development to consult, advise, and cooperate with the people of the state in the development of their communities.

In addition to extensive servicing of the three existing regional planning commissions, the Department has brought about the organization of a dozen or so counties into water-control associations. Preliminary work is being done in several parts of the state which will lead to further area organization built around common problems of development.

At the instigation of the Department, the University of Michigan will soon establish a college course in chamber of commerce work. This project is illustrative of the way much of the Department's work is done. First, the Department recognized that its most important service in local development is in strengthening local organizations engaged in such development work rather than performing direct services for them. An advisory committee of leading representatives of chambers of commerce and trade associations was brought together and presented with the proposal that college training for community- and trade-association executives might be established at one of the state's educational institutions. The idea was enthusiastically received and a plan for such a college course was worked out with the School of Business Administration at the University of Michigan. The advisory committee was discharged and sponsorship of the program turned over to the state association of chamber of commerce and trade association secretaries. A graduate course for chamber of commerce secretaries will be offered during the semester starting in February 1949 and will be followed later by an undergraduate curriculum.

An Upper Peninsula industrial-development brochure containing summaries of 37 community surveys * has just been published and is being distributed throughout the United States to attract industry to that region. After local committees had collected the necessary data, it was checked by appropriate state departments in Lansing and all the remaining work of editing and preparing the brochure was done by the Department.

Similar community industrial surveys are being made by more than 150 Lower Peninsula communities at the Department's urging and with its assistance. In the Lower Peninsula, district schools for community industrial surveys have been conducted in many towns and within the year the Department hopes to have community industrial surveys in its file for all towns in the state of more than 1,000 population.

As a guide to resort owners, a model township building code for resort areas was prepared prior to the 1948 tourist season and was tested by 50 operators.

A compilation of all laws affecting local planning has just been completed. In cooperation with Michigan State College, the Department will conduct a clinic for city and county planning commissions. Field contact by representatives of the Department provides counsel on the community level for all organizational problems, and informs local leaders of state and federal assistance programs.

Among material for local use that has been prepared by the Department are an original outline for community industrial surveys, a manual for community industrial-survey committees, and material on how to organize community industrial-development corporations.

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* Industrial Location Advantages of Michigan's Upper Peninsula—Michigan Department of Economic Development, Lansing 15, Mich. 1948. 42 pages.

The Future Of Domestic Garbage Grinders In the Municipal Sanitation Field

An engineered analysis that shows no more than 15-30% added load to the sewage treatment plant sludge-handling facilities

By MARK OWEN
Moore and Owen
Consulting Engineers
Indianapolis, Ind.

FOR thousands of years, garbage disposal—a major headache for many municipalities—has been prominent in the thinking of officials of cities, towns, and even hamlets. Among the antiquities of ancient Rome is an inscription on a pillar, "Take your refuse further, or you'll be fined." Our present-day sign simply reads, "No Dumping Here."

On the Island of Crete an ancient sanitary fill has been found and restored, dating back to 1900 B.C. This is a stone-lined pit into which the public refuse was dumped and covered with earth, both in alternate layers.

Grinders Present New Method

But there is something new under the sun in garbage disposal—the household garbage grinder or disposer. Even so, sewage-plant operators may not consider it entirely unique because a casual examination of the materials captured on the screens of sewage plants years ago revealed nearly every item of food waste discarded in household kitchens.

Water transportation is famous for its economy. What could be less expensive than water carriage of ground garbage by gravity, particularly when it has no appreciable effect on the hydraulics of the carrying system? Logically, one may ask, "Why not utilize the sewer system to transport all of the garbage of the community?" The answer requires an examination of the particular sewer system, sewage works, and garbage and rubbish collection and disposal methods. Further, the study must consider the average cost of installation of garbage disposers, the percentage of dwellings with plumbing systems that will accommodate the disposers, and the size of the garbage problem remaining due to substandard house plumbing. Finally—and mentioned last for the sake of emphasis—the first step to be taken in an examination of the problem in any community should be a definition of garbage, physically and chemically.

What is garbage?

Garbage comprises the discarded vegetable and animal matter resulting from the preparation and consumption of food. It will vary from 70 to 80% in moisture, 3 to 5% in ash, and 27 to 15% in volatile, or combustible matter.

Both garbage and sewage solids are produced from the preparation and consumption of food. The latter substance has been subjected to metabolism in the human body, while the former has not. A comparison of the chemical composition of raw garbage and undigested sewage solids, collected in a community, shows:

DRY SOLIDS—PER CENT BY WEIGHT

	Garbage	*Sewage*
Carbon	45.2	45.1
Hydrogen	5.6	6.1
Oxygen	31.6	24.4
Nitrogen	2.1	3.3
Sulphur	0.3	1.0
Ash	15.2	20.1
Total	100.0	100.0

Why should the two substances, one already digested in the human body, be so nearly alike in the percentage of the chemical constituents? I don't know—I leave it to you to answer.

Let me raise another question. In view of the almost identical composition of the two substances—sewage and garbage solids—will the sewage-treatment process know which kind of solids are being received?

Quantity of Garbage

The quantity of garbage produced in a community is influenced by the geographical location of the community, the seasons, and the habits and economic status of its inhabitants. More garbage is produced in the so-called "silk stocking" districts than in the slums. Moreover, it is "richer." In the South, where they have longer growing seasons, more green stuffs are consumed than in the North.

Over a period of years the composite habits and wealth of an area will produce a quantity of garbage that is fairly constant in terms of pounds per capital per day. The variation in production between areas is well illustrated by the following indices:

Region	*Index*
New England	100
Middle Atlantic	127
East North Central	132
East South Central	159
Mountain	100
Pacific	112

Per Capita Figure

A rather comprehensive survey conducted by the writer's firm in one city covered nearly 6,000 collections in a six-day period, representing over 7,900 families. The quantity of garbage collected averaged 0.55 pound per capita per day. A more recent study was made in another city where new garbage receptacles were furnished to each family of a selected group. The actual number of people contributing garbage during a seven-day period was known, as well as the weights of garbage discarded. The average in this case was 0.52 pound per capita per day.

Some of the foregoing data were used in preparing a sanitary report for a city of 60,000 people and are presented herewith to illustrate the size of and variations in the garbage problem.

Garbage is conservatively assumed to average 75% moisture, 3½% ash, and 21½% combustible, or volatile, matter.

Population	60,000
Garbage produced per year, lbs.	11,388,000
Garbage, produced per day, average, lbs.	31,200
Maximum month, lbs.	1,332,400
Minimum month, lbs.	660,500

Average month, lbs.	949,000
Dry garbage solids, average per day, lbs.	7,800
Volatile garbage solids, average per day, lbs.	6,710

We may now compare the quantities of sewage and garbage produced per day in this same community of 60,000 people. In making the comparison, one must remember that 100% of the population does not contribute either garbage or sewage. Undoubtedly more people contribute garbage than sewage. On the other hand, the influence of industry may tend to minimize the difference. Practically, therefore, we may disregard this disparity.

Quantity of Sewage Solids

Using available sewage data from the same community of 60,000 people, we find the average daily dry-sewage-solids load to exceed 19,000 pounds, as measured by suspended solids. Since the solids of sewage sludge are measured as *total solids* rather than suspended, it seems fair to say the actual load exceeds 30,000 pounds per day. Remembering that garbage solids averaged 7,800 pounds per day, if all of this community's garbage were sent to the sewage plant, it would increase the average dry-solids load therein by approximately 34%. Doubling the quantity of garbage produced per person per day would increase the dry solids load at the sewage plant by about 68%.

For over 50 years incinerator people have used rule-of-thumb factors for "shotgun" estimates of the size of refuse-disposal problems. Those factors are—1½ pounds of refuse per person per day, containing 65% by weight of garbage and 35% by weight of rubbish.

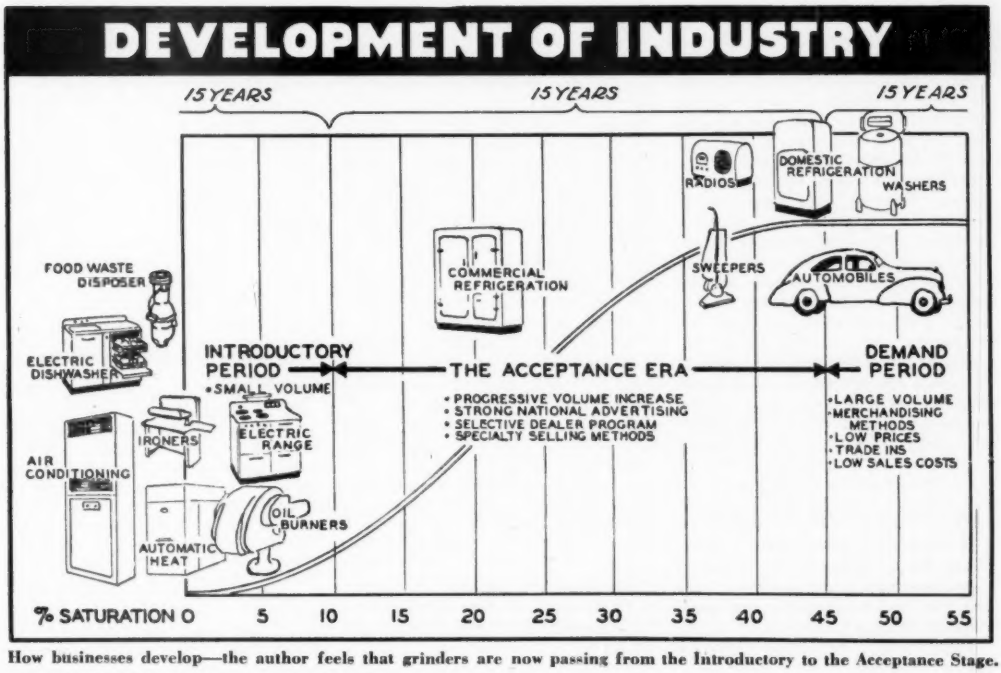
At the turn of this century, two engineers, one of whom I knew well, conducted a prodigious amount of research covering the quantity and character of refuse produced in New York and Philadelphia. They found that the inhabitants apparently produced 1½ pounds of refuse per person per day containing about 2/3 garbage and 1/3 rubbish. One of the engineers later became an incinerator designer and conveniently changed the 2/3 factor to 65%. Ever since then, the 65/35 factor has stuck.

Because our standard and habits of living have changed radically in the last 50 years, refuse can no longer, in my opinion, be designated as a 65/35 mixture. As a matter of fact, actual samplings made recently by the writer indicate the reverse may be expected. In the writer's opinion the production of garbage will never, in the average community, be as high as 1 pound per capita per day; but, on the contrary, will decrease while rubbish will increase.

Twelve years ago, at the 42nd Congress of the American Public Works Association in Toronto, the writer said of household grinders: "At the present price of [illegible] this device, only a very small percentage of the homes will be enjoying this convenience. For some time, perhaps, home grinders may not cause any difficulty, if at all, in either the matter of house plumbing, or effect at the sewage works. Present installation will undoubtedly be confined to the higher-priced houses whose plumbing systems should be entirely adequate for the purpose, if not actually designed for it. The grinders may, however, enjoy a history like that of electric refrigerators. In that case we shall see a great majority of home owners acquiring and using them. We may even witness their universal use in apartment houses before that time. It is the belief of the writer that garbage grinding in the home is with us to stay, and that its use will become more common. Sewage-plant operators are going to have this additional load to handle some day, and should make plans now to provide for it."

As of today there is no change in the writer's opinion on this subject. The sale and use of garbage disposers may well have a history paralleling the electric refrigerator and the pattern of all household appliances.

In the appliance industry a business



How businesses develop—the author feels that grinders are now passing from the Introductory to the Acceptance Stage.

develops from the *Introductory* period through the *Acceptance* to the *Demand* stage. It takes about 15 years—the "introductory" period—to obtain "acceptance" of an appliance. During the introductory period, sales reach 10% of the market. During this period many manufacturers enter the field, while prices of the product are high and distribution below par. When the appliance has a million users the appliance is said to be in the acceptance period. During the ensuing 15 years sales reach 45 to 50% of saturation. In the "demand" era which follows, the sales volume is high, prices are lower, and distribution is widened.

Washing machines, automobiles, and refrigerators are now in the demand period. Radios and vacuum cleaners are at the end of the acceptance era. Still in the introductory stage are electric ranges, oil burners, dish washers, ironers, air conditioning, television, and household garbage grinders.

When electric refrigerators were considered a luxury item for the rich, about 250,000 units were sold annually. Now the volume is almost 4,000,000 per year. The good experience people have with electric appliances is bound to make the newer items easier to market. Yet, in 1940, the census data for Indianapolis showed that only 54% of the dwellings had mechanical refrigeration, while 6,311 dwellings had no refrigeration of any kind.

More pertinent to our subject is the census data on plumbing systems in Indianapolis as of 1940. Out of 104,928 dwellings canvassed, 11,586, or 11%, did not have running water. Another 8,410 dwellings had running water but no toilets. In other words, about 35,000 people could not use garbage disposers. How many more dwellings there were with plumbing systems inadequate for gound garbage is not known. However, the census report does not show that about 18,500 places, or almost 18%, required major plumbing repairs. My guess is that about 25% of the dwellings in the average community have plumbing systems that would not accommodate garbage disposers.

Garbage disposers are now about 15 years old, and in spite of the war will soon emerge into the second, or "acceptance," period. If this appliance follows the trend just described, we can expect that by 1965 about 45% of the dwellings will be so equipped.

Analysis on 45% Acceptance

If you agree that the forecast of the future use of disposers is reasonable, we can re-examine the theoretical sewage load earlier discussed and make some practical adjustments.

Again using a population of 60,000 people, producing garbage at a rate of 0.52 pounds per capita per day, with 50% using household disposers, the average solids load per day received at the sewage plant becomes:

Dry sewage solids, total	23,000 lbs.
Dry garbage solids	3,900 "
Total dry solids	26,900 "
Per cent dry garbage solids of total	14.5
Per cent increase of dry solids due to garbage	16.9
Volatile solids	24,120 lbs.
Sewage	16,100 lbs.
Garbage	3,120 "
	19,220 lbs.
Digested sludge (50% of volatiles digested)	17,290 lbs.
Digested sludge—sewage only	14,950 "
Per cent increase in dry digested sludge due to garbage	15.6

In artillery parlance, we have now bracketed our target. The ultimate load appears to be 100% of the people producing about a half pound of garbage per person per day contributing all of their waste to the sewers. That would increase the solids load at the sewage plant by about 34%. The probable load appears to be that which increased the digested sludge load by about 16%.

In conclusion I firmly believe that the use of household garbage disposers will become as common as mechanical refrigerators. Further, I think it will be at least 20 years before the sewage-plant operator or chemist will be able to detect the presence of the solids from household disposers in the sewage.

Modern sewage treatment is well past the voting age. During recent years we have embraced and popularized shower baths, mechanical and/or automatic washing machines, automatic dishwashers, and air conditioners, all of which will have a far greater dollar impact on sewage plants than household disposers can ever deliver.

Expanding Municipal Uses Of Sound Recording

THE hour at which I am writing this letter demonstrates one of the advantages of sound-recording equipment to the Department of Finance and Taxation of the City of Chattanooga, Tennessee. It is now 6:57 p.m., Saturday, October 30, 1948. As you may readily guess, my secretary is not present. However, this does not keep me from catching up with my dictation.

Time saved in dictating is another desirable feature. One of my duties is that of Clerk to the Board of Commissioners, the minutes of whose meeting are now dictated in anywhere from 30 minutes to an hour, as compared with the former three to four hours consumed. This saving is due partly to my dictating at night when there are few or no interruptions, and partly to the machine's ability to record as swiftly as I can speak. Few secretaries, even stenotypists, can approach this speed.

Because, as a routine matter, the machine is turned on as soon as the office opens, it takes almost no time to reach for the microphone and record memoranda and instructions which otherwise might be forgotten because of numerous interruptions. This is the type of use to which the SoundScriber Corporation's glowing sales propaganda has appended the label, "The Electronic Memo Pad." It is almost what they call it.

We record an occasional conference with this machine when verbatim reporting of the conference may be useful later.

The recording medium is practically unbreakable, files easily, and mails safely, and can now be used again and again through an electronic erasing process.

The Superintendent of Education and one of his assistants each uses dictating and sound-recording machinery. The Health Department's Clinical Psychologist also uses sound-recording equipment. Rumor has it that the Police Department is contemplating purchase of recorders to monitor the radio and to gather information. Here in the Department of Finance we are experimenting with the recording of long-distance telephone calls. We think municipal use of this type of equipment will expand.

D. E. GEER
City Auditor
Chattanooga, Tenn.

Windsor Seeks Assessor

WINDSOR, Conn., is seeking a full-time assessor, and is conducting an open merit-system competition for the position, which carries an entrance salary of $3,270 per year, and a regular salary of $3,420 to $4,260. Application forms are available from the Town Manager, Richard H. Custer, and must be filed by April 30. The town has excellent assessing procedures and records now in existence, including complete aerial maps and personal and real-property record cards. Revaluation of all property by an outside apraisal firm is now under way and will be completed before October 1, next town assessment date.

Government by the People

THE CIVIC CONFERENCE PLAN

How can leading citizens in our home towns be induced to accept their civic responsibilities? Must all candidates for local office be "selected" by "leaders" before the people themselves are permitted to vote for them? Is there no practical way for the people to take charge of their local government? Is it necessary that capable and prominent citizens be deterred from accepting office because of the expense, recriminations, and unpleasantnesses incident to partisan political campaigns?

By H. E. A. FORSTHOFF, *Mayor*
L. STANLEY FORD, *Councilman*
Leonia, N. J.

LEONIA, N. J., a community of some 7,500 citizens just across the Hudson River from uptown New York City, has found the answer to these questions by employing a method known as the civic conference plan. The plan came into being as a result of two things: first, observation by the writer that, in spite of the New Jersey primary laws, candidates for local offices were being selected by small groups of from two to ten politically active persons in each party without primary contests and, second, the premise that the principles and issues which divide the citizens of the United States into two great parties are national and international in scope and have no applicability to local municipal affairs. The plan as finally adopted after several months of struggle and a close vote in the Republican Association was patterned after a similar plan in effect in Glen Ridge, N. J., for many years.

Under this unusual plan outstanding Democrats are elected to office in a predominantly Republican Town with the blessing of the Republicans.. No man seeks an office—the office seeks the man best suited for the requirements of that office. Every man in elective office in town has been sought out and asked to make his contribution to sound local government by his neighbors.

Organized in 1939, the Leonia Civic Conference has suffered but one defeat of a candidate, and that in a school board election where some unusual circumstances entered the picture.

The membership of the conference is composed of 24 delegates and 24 alternates, four each from the Republican association and the Democratic club, and the same number from each organization in town which has been in existence one year: which has over 500 members; whose membership is open to citizens generally in all parts of the borough, and which desires as well to participate in the activities of the Civic Conference. At the present time, the Women's Club, the Men's Neighborhood Club, the Home and School Association, and the local post of the American Legion each send representatives to the Conference. The Players Guild, which sponsors amateur theatricals, is the only qualified organization which does not participate.

Other Membership Provisions

In 1944, some who objected to the Conference pointed out that unless a citizen belonged to one of the member organizations, he had no voice in the selection of candidates. To remedy this, provision was made by constitutional amendment for the selection of not more than two delegates and alternates by petition from each of the four Election Districts in town simply by having a petition signed by 25 qualified voters in the district and having the petition presented to the Conference. At this time one delegate and one alternate enjoy membership by virtue of this provision. In addition to these delegates, any person who has served the borough in an elective office for which the Conference makes recommendations becomes, upon invtation and acceptance, a delegate for one year immediately following the end of his term of office. The objective here is to bring to the Conference the benefit of his knowledge of the capabilities of his former colleagues in the event of their consideration for re-election or advancement in office.

No person holding any salaried or elective public office in the borough for which the Conference makes recommendations is permitted to be a delegate or alternate. Not more than one member of any family may sit in the Conference at the same time. No delegate may hold office as such for more than three consecutive years. By unwritten rule, the chairman of the Conference holds office for just one term of one year. With these safeguards it is impossible for any small clique to gain control. The membership of the Conference is ever-changing, and to date some 200 citizens have served in this capacity.

Prior to each election the Conference meets to consider candidates for the offices to be filled. Notice of the meeting is sent not only to each member, but also to the head of each participating organization with the request that his group consider possible candidates so that the delegates from each organization will come to the meeting with definite suggestions of outstanding persons for each office to be considered.

Notice of the meeting is published on the front page of the local newspaper, and a general invitation is given to all residents to send in nominations. The meeting is opened with a public hearing at which any citizen is given an opportunity to be heard and to present the name and qualifications of any qualified person for any of the available offices. Then the Conference goes into a secret session so that a full discussion may be had concerning each candidate suggested. Here it considers the names which have been submitted, together with any others that may be presented by any member of the Conference. If the persons suggested are not sufficiently well known to the members of the Conference, and if no member is able to supply the information required, an information committee is appointed by the chair and sent out to get the facts about the proposed candidates. The meeting then adjourns to another date. When all of the in-

formation is in, and a full discussion of each proposed candidate has taken place, a secret vote is taken by ballot. Alternates vote only in the absence of delegates. The first proposed candidate to receive a majority vote of the entire Conference membership becomes the candidate to be sponsored by the Conference.

The Candidate and His Campaign

In the discussions of the Conference, the qualifications of each suggested candidate are fully discussed but the principal question to be answered is, "Is he the best man available in town for the particular position?" Politics, religion, economic status, and such matters are not discussed.

After the Conference has acted, a notification committee is appointed to wait upon the selected candidate in order to secure his consent to run for the office in question. Usually this is the first intimation that he receives that he has been considered. If he refuses, the Conference calls another meeting and starts over again. This rarely occurs. If he accepts, the Conference finances, manages, and carries on his campaign for him. No Conference candidate is ever asked to contribute to his own campaign, nor is he ever expected to work for his own election.

Under this plan business men, bankers, engineers, professors, and just plain citizens interested only in the welfare of their home town are the officeholders in this community. Under this plan a Nobel prize winner and the head of the chemistry department of a great university served on the Board of Education. Under this plan Republicans and Democrats live in harmony—at least for four years—and both contribute their talents to the welfare of the community. All elected officials except the Tax Collector serve without compensation and rarely for more than two terms. Men and women who would never seek office in the usual way are persuaded to accept their share of the responsibilities of local government—and the home town is much better for it.

In Leonia the people *select* as well as *elect* their local officials. They have done so for the past 10 years, and there is no indication that they want to go back to the old system.

Anyone interested in further information about the plan may obtain a brochure and a copy of the constitution and by-laws from the president of the Conference, Mr. Ed. S. Petersen, 537 Grand Ave., Leonia, N. J.

Kansas City Abandons the Dump

Sanitary fill method brings relief from smoking, offensive open-dump refuse disposal

By HENRY A. CRANDELL
Commissioner of Streets and Sewers
Kansas City, Mo.

BURNING, smoking, odorous, rat- and scavenger-infested dumps had been in existence around Kansas City, Mo., for longer than anyone can remember. Flies swarmed the place by day, and at night the glow from the burning debris resembled precincts in purgatory. However, City Manager L. P. Cookingham promised relief to the communities in the neighborhood of these dumps.

With this commitment made, he instructed Director of Public Works Reed McKinley, Assistant City Manager Tom Chenoweth, Superintendent of Street Cleaning C. R. Rea, and the writer to take the necessary corrective steps. This committee set up a budget of approximately $50,000, purchased one International TD 18 tractor with a Bull Clam attachment, and started operating a sanitary fill.

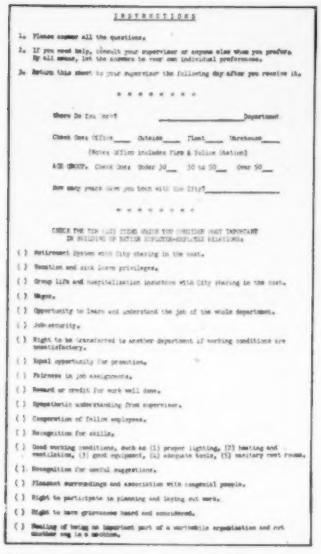
These were improvements from the start that justified the purchase of further equipment. To meet the need, the city acquired one D-7 and a #60 Caterpillar scraper. The city also bought a TD 18 International tractor with a Bucyrus-Erie bulldozer to do the work.

The debris that accumulates in a city of 500,000 people reaches staggering proportions. We are accumulating data as to truck loads, cubic yardage, and costs of operation.

Approximately 600 truck loads per day are received at two of our fills. This does not include garbage, which is collected independently of trash. Garbage is not hauled to the dumps.

We will be using the trench method along the contour of the old dump after we have compacted and covered it. It is estimated we will compact and cover between 1,000 and 1,500 cubic yards of debris before compaction per day. The fill is in fine sand washed in by the Missouri River.

Kansas City's sanitary-fill equipment ready for action that will correct old open-dump evils.



INSTRUCTIONS

1. Please answer all the questions.
2. If you need help, consult your supervisor or anyone else whom you prefer. By all means, let the answers be your own individual preferences.
3. Return this sheet to your supervisor the following day after you receive it.

* * * * * * * *

Where Do You Work? _____Department

Check One: Office___ Outside___ Plant___ Warehouse___

(Notice Office includes Fire & Police Station)

AGE GROUP. Check One: Under 30___ 30 to 50___ Over 50___

How many years have you been with the City?_____

* * * * * * * *

CHECK THE TEN (10) ITEMS WHICH YOU CONSIDER MOST IMPORTANT IN BUILDING UP BETTER EMPLOYER-EMPLOYEE RELATIONS:

( ) Retirement System with City sharing in the cost.
( ) Vacation and sick leave privileges.
( ) Group Life and Hospitalization insurance with City sharing in the cost.
( ) Wages.
( ) Opportunity to learn and understand the job of the whole department.
( ) Job security.
( ) Right to be transferred to another department if working conditions are unsatisfactory.
( ) Equal opportunity for promotion.
( ) Fairness in job assignments.
( ) Reward or credit for work well done.
( ) Sympathetic understanding from supervisor.
( ) Cooperation of fellow employees.
( ) Recognition for skills.
( ) Good working conditions, such as (1) proper lighting, (2) heating and ventilation, (3) good equipment, (4) adequate tools, (5) sanitary rest rooms.
( ) Recognition for useful suggestions.
( ) Pleasant surroundings and association with congenial people.
( ) Right to participate in planning and laying out work.
( ) Right to have grievances heard and considered.
( ) Feeling of being an important part of a worthwhile organization and not another cog in a machine.

The questionnaire to help frame an employee-relations policy in Tyler.

The ten top items checked by Tyler municipal employees as being most important in building up better employer-employee relations: (A first choice was given 10 points, and a tenth choice was given 1 point)

	Factor	*Points*
1.	Wages	1,958
2.	Retirement system with city sharing in cost	1,956
3.	Vacation and sick-leave privileges	1,947
4.	Job security	1,812
5.	Cooperation of fellow employees	1,198
6.	Group life and hospital insurance—city sharing in cost	1,185
7.	Equal opportunity for promotion	1,043
8.	Opportunity to learn job of whole department	876
9.	Good working conditions	872
10.	Reward or credit for work well done	792

We Found Out What Our Municipal Employees Want

By BILL N. TAYLOR
City Manager
Tyler, Texas

THE IDEA of conducting employee polls for the purpose of ascertaining the underlying desires of workers is not new to industry. Before the war, a number of polls were conducted for the purpose of finding out the relative importance of certain elements in employer-employee relations. Many large industrial corporations with enlightened labor policies such as General Electric and the Crown Zellerbach Corporation explored this field to a considerable extent.

Very little, if anything, has been done in governmental circles along these lines. There were sporadic examples at the federal level during the war, but so far as can be found out, little or nothing has been done at the state or local levels. There is no reason, however, why such a study is not just as applicable to the subdivisions of government as it is to private industry. Certainly anything that will improve the morale and attitude of workers in industry would have the same effect in government.

In Tyler we decided that a study of the underlying factors which have to do with an employee's everyday working and living would be not only interesting but of tremendous value to the organization. We immediately set out to prepare a questionnaire for distribution to every employee in the organization.

The preparation of the questionnaire was not a hurried-up affair, but a matter which was given considerable study. It was first reviewed and commented upon by a number of key employees. We then sent it to the Bureau of Municipal Research of the University of Texas for their comments and suggestions. We also sought the advice of and received suggestions from Alexander R. Heron, vice-president in charge of industrial and public relations of the Crown Zellerbach Corporation and author of the book, *Why Men Work*, and L. P. Jordan, Employee Relations Division, General Electric Company. Some useful ideas were also given by Mr. C. B. Cantrell, local representative of Hobson Ferguson and Associates, Management Consultants of San Francisco, who was working in Tyler with the employees of the Cotton Belt Railroad, a subsidiary of the Southern Pacific System. After reviews by these outstanding authorities, we prepared the final draft of the questionnaire and distributed it to the employee group.

The employees filled out the questionnaire in a far more intelligent manner than we had ever anticipated. We were amazed to find that only three questionnaires were missing out of a total of some 350. The employees apparently knew what they wanted and did not hesitate to say so. They also seemed to be pretty definite in the order of preference of the various factors which influenced their daily lives and work.

We tabulated the results by departments, by age groups, by tenure of office with the city, and then recapitulated the various groupings into a composite picture of the whole. We are, therefore, in a position to know what each department wants, what each age group wants, and what the groups by length of service want.

The Top Ten Factors

We have made an honest effort to find out what factors our employees consider contribute most to harmonious employer-employee relationships. We have attempted to diagnose the things that they like and to capsule them into a packaged job which contains 10 ingredients. These are the 10 factors which are most important to a majority of the workers, as revealed by the survey. These are the things that we wish to give our people so far as we can consistently do so.

Our employees want, first of all, economic security as evidenced by the fact that "wages" and "a retirement system" took first and second place in the balloting. But while they want to be decently paid and adequately cared for in their old age, they also want to be decently treated. There is testimony that our people want to be recognized as an integral part of a worth-while organization as equals or associates, and not as subordinates. The workers want to have a part in the direction of the organization. They want to participate in open conferences. They want

(Continued on Page 129)

A typical asphaltic concrete street with concrete curb-and-gutter serving a residential area.

Commissioner Finch points out required grade change on a street under improvement in the new program.

Toledo Tackles Its Street-Improvement Program

NEW PROGRAM USES MORE EFFICIENT ENGINEERING TO KEEP COSTS EQUITABLE

By ARNOLD V. FINCH
Commissioner of Engineering & Construction
Toledo, Ohio

DURING the war years, the streets of Toledo, like those of other cities throughout the nation, were neglected in the all-out effort to win the war. The engineering and maintenance staffs of the city became depleted. Very little work was done to improve the streets of Toledo, and what was done was confined to war-plant access routes.

Because of the unexpected volume of public and private reconstruction and expansion after the war, the improvement of the city's streets and alleys was further retarded. Lack of personnel to make surveys and prepare plans, and the shortage of materials, were contributing factors.

On May 1, 1948, the Division of Engineering and Construction, under the writer's direction, began a planning and reconstruction program covering residential and major street projects aimed at correcting these faults. Every available engineer and draftsman was assigned to surveys and preparation of plans for street improvements. The personnel was increased from a low of 39 during the war to 86 at the present.

We established a subdivision in our organization to prepare plans and supervise construction. The work was divided into (1) Major Streets and (2) Residential Streets and Alleys.

Major streets and expressways of Toledo are almost entirely financed without recourse to assessments on property abutting on the improvement. This results in the necessity for obtaining the money from the gasoline tax and license fees collected and distributed to the various governmental agencies by the State of Ohio, together with matching funds supplied by the county, state and federal governments. This method of financing usually entails a considerable lapse of time from planning to construction.

Included in a 1948 joint city-state-federal improvement program, plans for

A Galion blade grader and a Lorain dragline bring an unimproved street to grade preparatory to surfacing.

Finishing the combination curb-and-gutter. In 1949, one contractor will use a finishing machine for this operation.

which are now complete and construction to begin early in 1949, are two streets estimated to cost $1,040,000 for 40,700 square yards of pavement. These projects include considerable acquisition of property and moving of structures to provide for two 24-foot lanes separated by a medial strip.

City-State Program

Plans are being currently prepared by the city for a joint city-state 1949 street-improvement program which includes 10 streets, most of which are designated as state routes. This program, estimated to cost $1,957,080, consists of resurfacing existing pavements, and reconstructing pavements in poor condition or of insufficient width. This program has been approved by the State Highway Department. Also included in the 1949 program are five street-improvement projects estimated to cost $291,660, the total cost of which will be borne by the City of Toledo.

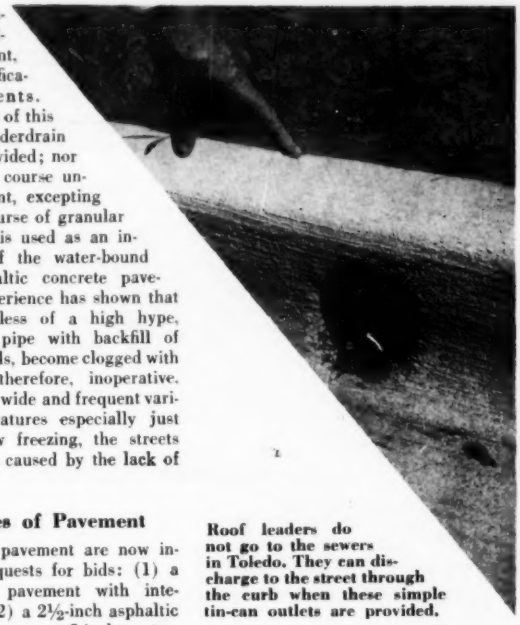
In 1950 it is proposed to improve 15 additional streets at an estimated cost of $2,203,150. Efforts are being made to construct these streets in a joint city-state program. As a majority of these streets are not on state routes, it is expected that a large portion of the total cost will be paid for with city funds.

Upon the completion of the 1950 program, it is expected that the major streets of Toledo will be in a highly serviceable condition and it can be expected that only a normal amount of preventive maintenance will be required yearly to keep them in an acceptable condition for the traveling public.

Many Problems Faced

As in many other cities, the paving of residential streets has been a difficult problem in view of rising costs. The desire of abutting property owners is to obtain hard-surfaced streets with curbs, in place of the present dirt and cinder streets. Residents on unpaved streets generally want their streets paved but are reluctant to pay the high costs. Faced with an increasing number of rejections by the City Board of Revision, after objections raised by the abutting property owners who pay the greater share of the costs through assessment, an extensive study was made of types of pavement and materials to reduce the total cost of improving these streets. Every possible means of reducing the costs of pavement were studied, including the grouping of street projects into districts, thus making attractive large projects.

The Council Improvement Committee, together with administrative officials and the contractors in this vicinity, held a joint meeting to determine what might be acceptable competitive types of construction. Also, what the contractors considered nuisance items, needless refinement, and costly specification requirements. From the results of this meeting, curb underdrain is no longer provided; nor is an insulation course under the pavement, excepting for a ½-inch course of granular material which is used as an inverted choke of the water-bound macadam asphaltic concrete pavement types. Experience has shown that curb drains, unless of a high hype, such as 6-inch pipe with backfill of granular materials, become clogged with sediment and, therefore, inoperative. Despite Toledo's wide and frequent variation of temperatures especially just above and below freezing, the streets show no damage caused by the lack of curb drainage.



Roof leaders do not go to the sewers in Toledo. They can discharge to the street through the curb when these simple tin-can outlets are provided.

Two Types of Pavement

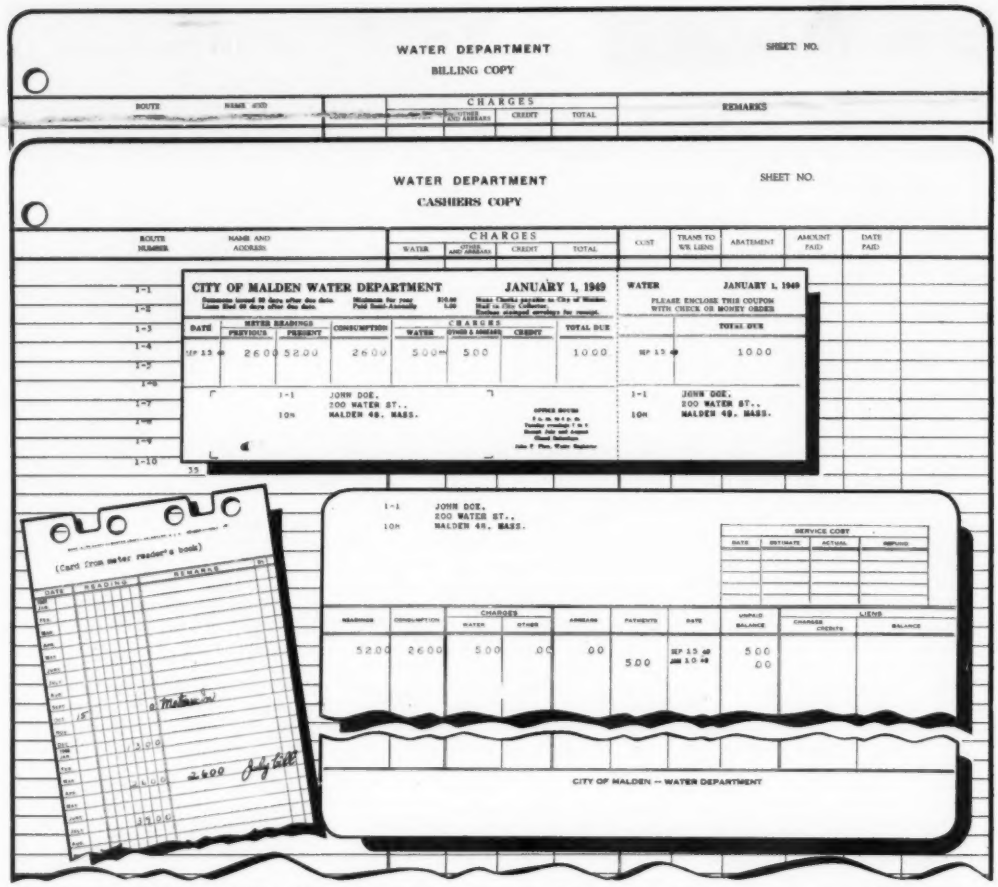
Two types of pavement are now included in all requests for bids: (1) a 6-inch concrete pavement with integral curbs and (2) a 2½-inch asphaltic concrete surface on a 5-inch water-bound macadam base with combination concrete curb and gutters. These two types are considered the minimum acceptable, each contractor having the option of bidding on either or both of the two types of pavement. In the case of the concrete type, the curb is built integral by a new method of formation. The finishing machine travels on two forms; one on centerline of pavement and the other on the back of curb. Thus only three sets of forms are set for the normal 24-foot residential pavement. A single screed, nonvibrating, finishing machine is permitted and expansion joints are placed at 450-foot intervals with impressed contraction joints at 20-foot spaces (not edged).

The main concern of the city administration is to bring the maintenance and reconstruction of existing paved streets up to date and to pave all the residential streets and alleys, for two reasons (1) reduce the required maintenance of breaks in pavement surfaces and the excessive cost of maintaining unpaved streets and alleys and utilize the savings thereby made for preventive maintenance such as sealing cracks in asphalt and concrete pavements and sealing brick pavements; (2) provide streets which the traveling public can use with safety and in comfort.

Toledo, with a presently estimated population of 305,000, is in a difficult position with regard to the construction of expressways. The large cities of the country have a desperate need for expressways, travel time on city streets extending to literally hours to reach the downtown section from outlying districts. In Toledo, the downtown section can be reached in less than thirty minutes from any outlying section. It is our opinion that it is necessary for the accommodation of traffic first to develop the potentialities of the present streets, keeping within the limits of the right-of-way as much as possible, and second, to plan a long-range program to provide expressways for the use of both local and through traffic when traffic volumes warrant the necessary expressways.

The expressway plan for the Toledo area, developed in conjunction with state and federal officials, provides for east-west and north-south routes, together with several connecting links, estimated to cost in excess of $50,000,000, approximately a quarter of which would be paid by the city. To pay the city's share of paving all residential streets and alleys would cost $4,000,000; to improve the major streets as previously outlined in this article would cost the city $1,800,000. The total cost to the city for the expressways, major-street improvement, and paving of residential streets and alleys would be approximately $20,000,000.

As this amount of money cannot be made available in a short time, the desired improvements are being carefully planned so that the most-needed projects will be constructed as the money becomes available.



Machine water billing at Malden, Mass. Large sheets are journals that accumulate the data to be machine-computed and printed on the bill (center) and unit ledger (lower right). Original data are on meter-reader cards (bottom left).

Machine Bills Malden's Water

By JOHN F. FLINN
Water Registrar
Malden, Mass.

MARCH 15 and September 15 of each year and continuing for the ensuing nine weeks in each period, water meters are read for bills issued July 1 and January 1. The records are written by our Underwood Sundstrand tax computing machine on the forms shown here. The static information such as name, address, route and service number have already been printed by Addressograph.

The Sundstrand is a 10-key machine similar to an adding machine with the added advantage that it can multiply a given rate times the gallons-consumed figure. After setting up the date on the machine, the previous reading is put on the machine and then the current reading, and the machine automatically subtracts for the consumption and prints the date. Then the water charge, arrears, and credits are put on the machine. Strike the motor bar and the machine automatically prints balance due and the date.

Ledger cards are filed according to routes of which there are 144 with about 70 accounts on each. Billings for each route use two each of the large sheets shown: 39 accounts on one sheet and the remainder for the route on the second sheet. For each route, the machine totals amount of water consumption, total water charge, arrears, credits, and total money due.

In addition to posting payments to consumers' ledger cards and daily posting sheets, the machine is used for making out summonses and making up lien charges and charges transferred to taxes. At all times it is available for adding.

What Is a "Reasonable" City Milk Ordinance?

By JAMES A. TOBEY, *Dr. P.H., LL.D.*
Member of the New York Bar

THE power of American cities to enact and enforce valid ordinances for the control of market-milk supplies is undisputed. There are, however, certain legal limitations on this power which municipal corporations sometimes overlook. In the first place, all such ordinances must be duly authorized by the statutes and must not be inconsistent with state law or state regulations; in the second place, all such ordinances must be reasonable and must not be arbitrary, oppressive, capricious, or discriminatory.[1]

The courts whose function it is to determine the constitutionality of municipal ordinances are agreed on these general principles of law, but they have varied widely in their interpretations of what is "reasonable" in the content and in the enforcement of milk ordinances.[2] In one jurisdiction it has been held, for example, that prohibition of cream for the manufacture of ice cream from sources more than 50 miles from a large city is an unwarranted and unreasonable interference with legitimate business,[3] but in another jurisdiction a court has ruled that a requirement in an ordinance that all pasteurized milk sold in a city be pasteurized within 6 miles of the center of the city is valid and proper in the interests of the public health.[4]

Baltimore and Beloit

There is, of course, a big difference between 50 and 6 miles, but it is the circumstances in a particular instance which govern the judicial decisions as to what is or is not reasonable in a milk ordinance. In the former case,[3] which was decided by a Federal District Court in Maryland in 1935 and involved a regulation of the Health Commissioner of the City of Baltimore made under the authority of a city ordinance, the court pointed out that the wholesomeness of the cream in question could be determined by the Health Commissioner, and that its exclusion from the city purely on the grounds of distance was an improper interference with interstate commerce and an illegal trade barrier on a legitimate article of sale. For these reasons an injunction was granted against the operation of this regulation, which was held to be invalid.

In the later case,[4] decided by the Wisconsin Supreme Court in 1947, the court stated that the City of Beloit, whose ordinance was contested by a milk company operating a plant some 30 miles distant, was in the center of an extensive dairy region, that three-quarters of the milk produced in this area was used elsewhere than in the city, that the ordinance was not adopted to limit plants then in operation, and that it was a reasonable public-health measure which did not constitute an illegal trade barrier. This court also pointed out that any such ordinance must stand on its own merits in accordance with the facts in the particular instance and the purposes which it was intended to serve.

Various State Decisions

A similar situation arose in Michigan in 1948, where an ordinance of the City of Grand Haven required that all pasteurized milk sold in the city must be pasteurized within 5 miles of the city. A milk dealer in another state brought suit in the Federal District Court to enjoin this provision of the ordinance, but it appeared from the evidence that the dealer never had made formal application for a license to sell milk, and that such a license had not been denied. The court, therefore, held that he did not have a good cause of action and refused to pass upon the actual constitutionality of the ordinance.[5]

The Wisconsin case [4] is contrary to several decisions in California, in which it has been held that ordinances requiring pasteurized milk sold in the city to be pasteurized within the corporate limits of the city are invalid and void as trade barriers.[6] To the same effect are court decisions in Minnesota [7] and Kentucky.[8]

References

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   Meridian v. *Sippy* (1942), 54 Cal. App. (2d) 214, 128 P. (2d) 884.
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7. *State* v. *City of Minneapolis* (1933), 190 Minn. 138, 251 N. W. 121.
8. *Grant v. Leavell* (1935), 259 Ky. 267, 82 S. W. (2d) 283.
9. *City of Electra* v. *Carnation Company of Texas* (Tex. C. A. 1947), 207 S. W. (2d) 192.
10. *City of Greenville* v. *Cabell's* (Tex. C. A. 1947), 207 S. W. (2d) 898.
11. *Prescott* v. *City of Borger* (Tex. C. A. 1942), 158 S. W. (2d) 578.
12. *Higgins* v. *City of Galesburg* (Ill. 1948), 81 N. E. (2d) 520.
13. *Alabama State Milk Control Board* v. *Graham* (Ala. 1947), 33 So. (2d), 11.
14. *Neely* v. *City of Atlanta*, (Ga. 1947), U. S. Pub. Health Reports, Jan. 23, 1948.

An example of an unreasonable and improper milk ordinance is shown by a recent decision of the Texas Court of Civil Appeals,[9] which had before it an ordinance of the City of Electra. This legislation stated that no pasteurized milk or cream should be sold in the city unless pasteurized therein, except as authorized by the health officer, who was directed to inspect and grade all milk and cream in accordance with the state regulations. The ordinance further stated that the health officer might approve milk and cream from distant sources if such products had a rating of 90% on the basis of the United States Public Health Service Rating Method.

In an action brought by a milk company which had a creamery in Wichita Falls, Texas, about 30 miles distant from Electra, the trial court held that the section of the city ordinance referring to this 90% grading method was so indefinite as to be void. On appeal, the Texas Court of Civil Appeals sustained this decision, pointing out that nowhere in the state laws or regulations was there any reference to the 90% grading method, which seemed to be given only in a pamphlet issued by the Public Health Service in connection with its standard milk ordinance. The city ordinance therefore included a non-existent legal standard, which could not be complied with, and its effect was to empower the health officer to impose arbitrary and unreasonable conditions upon a person seeking to sell milk.

Another recent Texas decision is concerned with the reasonableness of the enforcement of a milk ordinance.[10] In this case the Court of Civil Appeals ordered a city health officer to issue a permit to a milk company which had substantially complied with all laws and regulations. The company had applied for the license but the health officer had failed to act upon the application within a reasonable time, which the court characterized as arbitrary and capricious and an abuse of the discretion vested in the health officer. The validity of the ordinance itself was not in question in this case.

In 1942, however, the Texas Court of Civil Appeals ruled invalid a city milk ordinance which provided that no milk or cream could be sold in the city if pasteurized outside of the county in which the city was located. This provision was held to be in conflict with the state laws, and the ordinance was likewise said to be void on the grounds that it clothed the local health officer with arbitrary and unreasonable discretion in granting or refusing permits to sell pasteurized milk in the city.[11]

Illinois, Alabama, and Georgia

Another case involving conflict with a state law occurred in Illinois in 1948, where it was held that a city could not require licenses and impose fees on dairies located half a mile or more beyond the city limits, since no such powers were delegated to the city in the statutes.[12] It has been generally decided by the higher courts in this country, however, that cities may inspect and supervise dairies beyond the borders of the city, and, if necessary to the protection of the public health, may debar unsanitary or unwholesome milk from sale within the city.[2]

In Alabama an order of the State Milk

Control Board requiring that delivery of fluid milk on retail routes should be confined to an every-other-day basis for any one customer was upheld by the State Supreme Court as constitutional and not arbitrary or unreasonable.[13] This action was, of course, taken under the terms of state legislation and did not involve municipal ordinances.

A requirement in an ordinance of the City of Atlanta, Ga., that all milk sold in the city should henceforth be Grade A pasteurized or certified-milk pasteurized was upheld in 1947 by the Fulton Superior Court.[14] Although this is a decision of a lower court, the case was not appealed and sets the law in this jurisdiction until such time as a higher court rules otherwise. In this instance the standard imposed by the city for milk was higher than that of the state law, but the court stated that it was not inconsistent with the law. The general rule is that cities may adopt higher and more stringent standards, provided that they do not conflict in any possible way with existing state laws or regulations.[2]

The Wisconsin "Wyeget"

SPOTS SEWER-SERVICE LINES TO SIX-INCH ACCURACY

By A. W. ELY
Consulting Engineer
Madison, Wis.

SEWER-SERVICE lines can be located to an accuracy of six inches with a new electric feeler device developed by our organization. We have given it the title of "Wyeget."

The service finder was developed during the period when the writer was serving Edgerton, Wis. During that time it was necessary to prepare master maps of sewers from sketchy original data—all that was available. After many discouraging experiences trying to use these vague records, we were virtually forced to develop some more practical methods. The result of our studies was the Wyeget feeler.

Feelers Locate Services By Electric Signal

The instrument consists of a plate which carries spring-loaded feelers that touch the sides and top of the pipe. When the feelers encounter an opening, they swing into the gap. This swinging motion turns a cam and makes an electrical contact, sending a signal through the trailing cable to the indicator box mounted over the manhole.

The indicator has three audible signals which distinctly indicate the position of the opening (right, left, top). The counter, reading to a tenth of a foot, measures the distance as the instrument progresses up the sewer.

The feelers, with associated springs, cams, and switches, are all mounted on a plate which stays horizontal as it travels forward. The base is expandable to permit operation in sewers from 6 to 24 inches. Different leg assemblies for the feeler cylinders put them in correct position to chart openings in the different sizes of pipes.

Low-voltage signal current allows operation in a sewer flowing full. The signal cable passes over a friction roller connected to a counter which turns, in unreeling, to indicate the distance from the manhole to the opening. A lightweight jack in the manhole below the recorder controls the cable travel.

The instrument was recently demonstrated in Milwaukee, Wis., where Lloyd Knapp, superintendent of the Bureau of Sewers, confirmed the accuracy of its operation. Mr. Knapp indicated that the cost of a new connection is $25 and if the Wyeget were used only 20 times it would pay for itself.

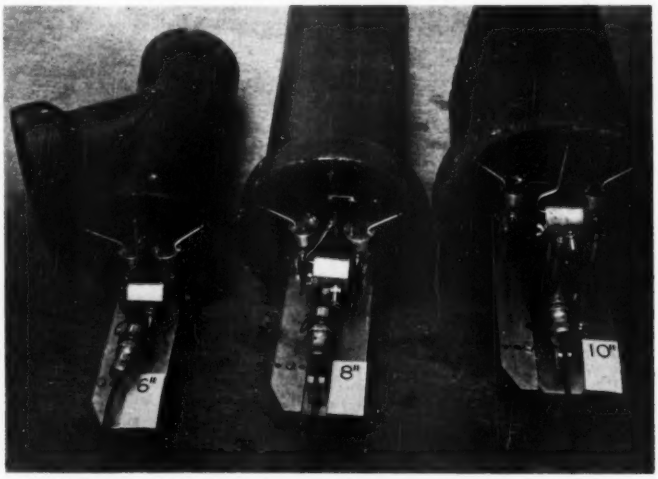
Before completing the construction of this instrument we made a nation-wide survey of its general usefulness. To our surprise we found that every city we approached, except four, had some use for this instrument.

Alex W. Ely holds the instrument which is capable of locating services within 6-inch accuracy.

Operating Procedure

Sewer rods, flexible cable, sewer tape, wire and float, or just simple wood slats are first run down the sewer to determine that the sewer is fairly free. Then the instrument is pulled through as this equipment is pulled out.

This type of equipment is used in connection with our regular consulting work. Much of this covers modernizing municipal public-works records. The finder is available to others, however, either on a purchase or rental basis.



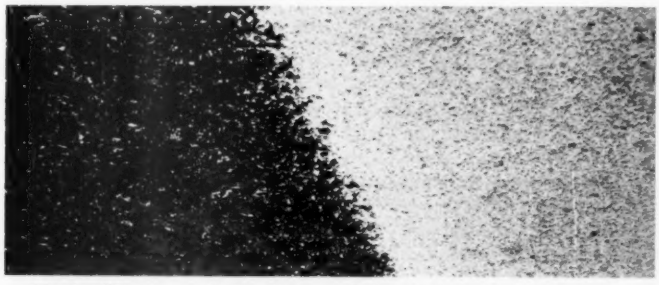
The "Wyeget" is adjustable; here it is shown in a 6-, 8-, and 10-inch pipe.

Chicago Street Sealcoat

. . . ADDS YEARS OF LIFE TO OLD ASPHALT PAVEMENT

By L. M. JOHNSON
Commissioner of Streets and Electricity
Chicago, Ill.

This sheet asphalt street required quick action to prevent its total loss.



Showing bitumen applied to the street before and after spreading chips.

Street and seal coating. Many years of life have been added at small cost.

IN AN effort to solve the major portion of street maintenance in the City of Chicago (population 3,376,438, 1940 census) a preservative called "seal-coating" was applied to the surface of pavement which had been reaching a stage of disintegration. Before applying seal-coating, the street surface must be properly prepared. Holes, if any, must be plugged with a pre-mixed material, large cracks must be filled with a crack-filler, usually R.T. #12 road tar, and the macadam streets should be brought to proper grade, if necessary; also mechanical power brooms are used to sweep the surface of the pavements. For this purpose, city-owned Hough Universal brooms are used, attached to the rear of a truck. On macadam pavements, however, it has been impossible to remove the dust sufficiently to make a proper bond for the sealing application, so a tack-coat of bitumen, either MC-0 or R.T. #3 of one (0.10) gallon per square yard is applied. On concrete and cement-bound macadam pavements the pavement is flushed with a fire hose sufficiently in advance to dry thoroughly. The pre-mix material, developed by our city chemists, is the cold-mix type and can be made up in quantity and stock-piled for future use.

The seal-coat application consists of approximately one-third gallon per square yard of either a road tar #10 or asphalt medium cure #5 heated to the proper temperature and applied by means of a motor-driven pressure distributor tank truck. This serves as a water-proofing and prevents moisture and frost from further entering the surface of these pavements through cracks or any open or porous defects.

These bitumens are immediately covered with approximately 18 pounds of $\frac{3}{8}$-inch limestone chips or gravel by means of a Buckeye mechanical spreader. Our practice is to use a 10-foot spreader width. Following this, a drag broom is passed over the covered surface and rolled once by a 3-ton roller. The street is then open to traffic.

During the last five years that this method of preserving pavements has been used, the City of Chicago has sealed about 800 miles of pavements.

By this means millions of dollars invested in city pavements have been preserved for many years beyond their normal life expectancy.

Chlorine Dioxide's SCORE

Morrisville, Pa., solves water-treatment problem made difficult by algae and industrial wastes

By L. F. NEWELL, *Superintendent*
Morrisville Water Works
Morrisville, Pa.

FOR the past four years we have been producing water of higher quality, more satisfactory to our users. We have been able to do this through the beneficial action of chlorine dioxide.

Originally our tests and odor problems were caused almost exclusively by algae. As industry above our intake expanded, troubles from industrial wastes, including steel-mill and rubber-plant effluents, gradually increased our problem. But these were nothing compared with the difficulties that arose when, three years ago, a flash flood at Phillipsburg brought mud and sewage to our intake. The raw water had a turbidity of 4,000 and a smell of sewage. Thirty hours later, the turbidity was 1,000 and the water was black in color. Yet, throughout this period, our water users experienced no change in the customary high quality of tap water.

Our present plant was originally built in 1923. By 1941 our plant was so inadequate for the demands upon it that it was necessary to overhaul it thoroughly and enlarge the various units. The new equipment installed included a chlorinator, a dry feeder, mixing chambers, agitators, and larger settling basins. This improvement has been equally beneficial for a proper mix and for settling of the water.

How the Plant Works

Water from the Delaware River is brought into the plant by two American Well Works pumps, each having a capacity of half a million gallons a day. Liquid chlorine is added to the water while it is on its way to the chemical manhole. At the chemical manhole, soda ash and alum are added by Wallace & Tiernan dry feeders; next, the water enters the mixing chambers, which operate in series. These are equipped with Roberts agitators. Here two sets of paddles, located one above the other on a vertical shaft, operate at four speeds to mix the water. The third speed, which mixes the water at five rpm, gives us the best results for the major part of the mixing period.

Water is retained for half an hour in the first basin. It proceeds to the second chamber for another half-hour. A good floc forms here which settles in the baffled settling basin. The water is retained here for five hours. It then goes through the filters and into the clearwell, from which it is pumped into the distribution system by two Pennsylvania pumps, each of which has a capacity of one million gallons a day.

Experience on an average day has shown us that our water has a break-point chlorine demand of about 3 ppm. To run our tests, we take our first sample after the chlorine has been in contact with the water for about one hour. Our residual on this test reads from 1 to 2 ppm, and stays there for 15 or 20 minutes before fading.

Our second sample is taken from the top of the filter. It takes five hours for the water to move from the point where the first test was made through the settling basins to the top of the filter bed, so we take this sample five hours after the first. On this sample we maintain a residual of about .5 ppm, which stays at that reading for at least 20 minutes before fading.

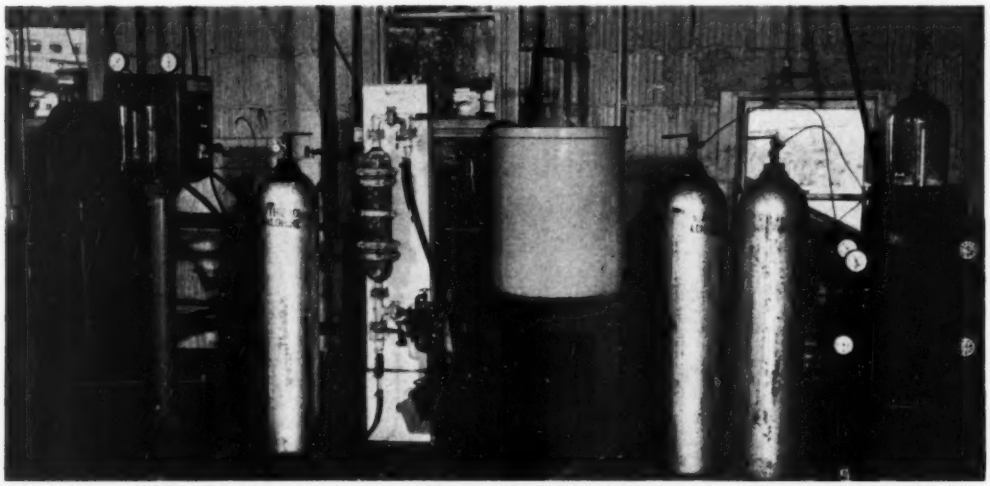
The third sample to be tested comes from a tap at the bottom of the filter. This sample has a residual of .2 ppm.

Chlorine dioxide is ejected into the water in the channel where it overflows into the clear well. The water leaving the plant has a residual of .5 ppm without the taste and odor of chlorine.

Tests made at the far end of the distribution system have a residual of .1 to .2 ppm. We have no water-user complaints on the taste or odor.

Chlorine dioxide is generated by reacting chlorinated water with a solution of sodium chlorite. A chlorinator supplies the chlorine water, and a hypochlorinator the chlorite solution. The two solutions are fed into a simple mixing chamber, where they react to form chlorine dioxide. We have no trouble in regulating the proper mix.

Our cost in the use of chlorine dioxide is less than the price we paid for carbon and the results are better.



Reading from left to right the equipment is as follows: chlorinator which furnishes chlorine water to chlorine-dioxide mixing chamber; chlorine cylinder; chlorine-dioxide mixing chamber; hypochlorinator which furnishes sodium chlorite to mixing chamber; crock containing sodium chlorite; chlorine cylinders; large chlorinator for pre-treatment of water.

Why Cuyahoga County Wants Voting Machines

The November 1948 election vividly demonstrated the inefficiency of paper ballots for Cuyahoga County, Ohio. Unofficial returns were not completely tallied until several days after the election and the final official count revealed a grave margin of error. The Citizens League has for some years advocated the use of voting machines as a means of avoiding such inaccuracies and delays, and the Elections Committee of the League has recently submitted a report on voting machines for Cuyahoga County recommending their purchase by the County Commissioners. The following is a digest of that report.

By **DOROTHY M. BROWN**
Research Assistant
The Citizens League of Cleveland
Cleveland, Ohio

VOTING machines mechanically tabulate votes as cast and the total vote appears on the machine when the polls close. On one make of machine,* the total vote appears on the back of the machine; on the other† the total vote appears on the front of the machine. It is possible to register the vote by taking a photograph of the count as shown on the machine, although in common practice the two judges merely transfer the figures from the machine to the registry books. A complete return for a city the size of Cleveland should be ready within an hour and a half after the polls close. Some cities report returns within an hour.

The machines are so constructed as to make it impossible to vote for more than the allowable number of candidates. Since a machine is locked as the polls open and can be unlocked only when two keys are used simultaneously, one of which is held by a judge of each party, tampering with votes cast is difficult if not impossible.

With curtains which close automatically and steel wings on each side of the machine, detection of a vote is relatively impossible. It is claimed that the use of concealed mirrors, chalk on the levers, holes in the curtain, and other such devices may permit a vote to be seen, but by comparison to the possibilities of detection with paper ballots, the risk is negligible.

For efficient operation at least two machines per precinct of 800 electors should be used, permitting larger precincts and thereby reducing not only the number of precincts but also the number of booth workers and temporary board officials. Wages and costs of supplies are correspondingly lowered. There is also a reduction in the number of ballots printed. In spite of company claims of sizable savings, there are additional expenses and amortization costs not encountered with paper ballot that make immediate savings questionable. Long-term savings depend on the efficiency of the administration of elections.

It is claimed that voting machines would encourage voting a straight ticket. Actually, it is easier to vote an accurate split ticket on the machine than on the paper ballot, for the machine makes it impossible to vote for more than the required number of candidates.

In estimating the number of machines needed for Cuyahoga County the first consideration is the number of registered voters to be assigned to each machine. Detroit apportions 650 voters to a precinct, although some of their precincts total considerably more than 650 and will be redistricted. For the average election one machine is assigned to an average-sized precinct. At a municipal election, Detroit estimates that 60% of the electors, or 390 voters to a machine, go to the polls; at a presidential election, with two machines in use, 90% of the electors, or 293 voters per machine, cast ballots.

For municipal elections in Cuyahoga County, Ohio, the ballot is relatively short and the percentage of electors going to the polls over a period of the last twelve years has varied between 48.7% and 70.7%. In state elections other than presidential years the percentage has varied between 46.7 and 67.6%. The state ballot is longer. The primary ballot in presidential years is very long but only between 20.5% and 69.6% go to the polls. Presidential general elections bring out 85% to 90% of the electors.

The table below indicates the voting time allowable if 400 electors are assigned to a machine.

Time Factor

It has been claimed that any Cuyahoga ballot can be voted in two minutes, but it is obvious that a longer time will be necessary when the machine is unfamiliar to the voter and the ballot unusually long. Nor do voters arrive at regular intervals to allow the machine to be in constant use.

On the other hand, there are relatively few elections over the years at which the maximum percentage of voters shown above go to the polls. One machine to a precinct of 400 should be a good ratio, with the exception of the presidential years.

In considering the number of electors to a precinct when machines are used, one machine to a precinct of 400 would mean an increase in rather than a reduction of the number of precincts and

Elections	*Percentage of electors voting*	*No. of voters per 400 electors*	*Time allowable per vote in a 12-hour day*
Municipal	48.7%–70.7%	195–283	2 1/2–3 1/4 minutes
State General (non-presidential)	46.7%–67.6%	187–270	2 2/3–3 3/4 "
Presidential Primary	20.5%–69.6%	82–278	2 1/2–8 3/4 "
Presidential Election	85.7%–90.5%	343–362	1 9/10–2 1/10 "

* Automatic Voting Machine Corporation, Jamestown, N. Y.
† Shoup Voting Machine Corporation, Philadelphia, Pa.

election officials. Two machines to a precinct of 800 electors provides a more efficient use of men and materials and an ultimate decrease in the cost of elections.

It is suggested that Cuyahoga County purchase not more than 300 machines per year to allow for necessary adjustments, and that precincts be equipped with three machines to a precinct of 800 for the first two elections, after which familiarity with the machines should reduce the average time required by a voter sufficiently to permit the third machine to be removed to equip a new precinct.

Basing estimates on two machines per precinct of 800 plus 50 stand-bys, and on an expected registration of 700,000, which may be reached in the near future, the total number of machines needed to equip Cuyahoga County would be 1,800 machines. (Two machines per precinct × 875 precincts = 1,750 machines + 50 stand-by machines = 1,800 machines.)

Costs

In hypothecating the situation in Cuyahoga County, the following calculations are based on complete conversion and the use of 1,800 machines. It is impossible to estimate total costs on other than a cash basis. Many variables make even this estimate a very tentative one.

Either make of machine of the size needed by Cuyahoga County now costs between $1,400 and $1,500 each. 1,800 machines at $1,450 amounts to $2,610,000.

Reducing the number of voting places from the present 1,656 to 875 means the following cut in the number of booth officials:

Paper Ballots:	
10 officials per voting place, 1,656 voting places	16,560 officials
Machines:	
6 officials per voting place, 875 voting places	5,250 officials
Reduction in number of officials	11,310

ESTIMATED COSTS OF MACHINE ELECTIONS

	Decreases	*Increases*
Salaries		
Board officials	$ 69,480	.....
Other help	37,416	.....
Booth supplies	3,600	.....
Printing ballots		
Absentee ballots	15,000	$ 1,500
Certificates	.....	500
Maintenance		
Storage	.....	25,000
Addition rental on polling places	.....	5,000
Cartage	.....	36,000
Set-up men	.....	3,600
Insurance	.....	8,000
	$125,496	$ 79,600
Estimated savings per year (not including original cost or debt charges on machine)		$ 45,896
Annual purchase cost of purchasing 300 per year		$435,000

New Regulations for Smoke Control

BEGINNING March 1, 1949, the city of Saint John, New Brunswick, will have a smoke-nuisance by-law with sufficient "teeth" to eliminate at least part of the smoke and soot nuisance which has plagued residents for more than 50 years. The new regulations come after several years of intermittent discussion by civic groups and the city's Common Council, and are based on a thorough study made of similar action in United States cities, especially St. Louis, Mo., and Pittsburgh, Pa.

Chief offenders in Saint John have been the buildings operated by the federal and provincial governments, especially the Dominion post-office building and the plant of the New Brunswick Electric Power Commission. The Ringelmann Chart, used by the United States Bureau of Mines, will be used in grading the degree of smoke which will be considered dense if it is equal to or more dense than No. 2 of the Ringelmann Chart.

The smoke regulations apply to all stoves, furnaces, railway locomotives and other fuel-burning equipment in business and industrial plants, all of which must be equipped with a device to reduce the amount of fly ash emitted into the air to 0.75 grains per cubic foot of flue gas, at 500° F.

The law also provides that all railway locomotives operating within the limits of the city must be operated with smokeless solid fuel or must be equipped with mechanical fuel-burning equipment or devices. Another clause provides that all sales of fuel- or refuse-burning equipment must be reported to the city smoke inspector within seven days of the sale. The smoke inspector is also given authority to examine the books and accounts of any person or firm dealing in such equipment.

Plans and specifications for the repair of chimneys or stacks, or for the installation of new chimneys, must first be approved by the smoke inspector, and must conform to the provisions of the by-law before a permit for their construction will be granted.

Appeal Board Established

An annual certificate of operation must be procured to use any furnace or fuel-burning equipment, and after any owner or lessee of such equipment has been notified three times of an infraction of the by-law, he must appear before the smoke inspector and give sufficient cause why the offending equipment may not be sealed until proper repairs or installation is made. The owner or lessee, however, may present his case to a five-man appeal board set up for dealing with such cases.

A scale of fees ranging from $1 to $5 has been set for issuing permits for repairs and alterations to furnaces and chimneys and for their inspection. The first annual inspection under the new by-laws will commence on March 1, 1950. Fines are provided for violation. These range from $25 to $100, with a one-month jail sentence as alternative.

A six-months' waiting period is allowed for the acquisition and installation of hard-to-get equipment.

Another clause provides that there must be available to firemen of boilers or furnaces, some means of knowing, without leaving the boiler or furnace room, just what density of smoke is issuing from the chimney. This device may be a window or other opening, a mirror so arranged as to reflect the top of the chimney, or an approved smoke indicator.

Rutherford's Truck Lift

MAINTENANCE of big equipment is no longer the difficult problem that it formerly presented at Rutherford, N. J. Automotive equipment for the Board of Health and the Police, Fire, Shade Tree, and Public Works Departments can be boosted into a convenient position by the new hydraulic car lift, designed heavy enough to handle the largest equipment.

PHOTO COURTESY ED FARLIE, RUTHERFORD, N. J.

Maintenance Foreman Anthony Venice, right, operated new truck lift.

The car lift was part of the post-war equipment obtained by Councilman Paul W. Blye, Chairman of the Public Works Committee. Its operation is the responsibility of Superintendent William Dorgeloh, of the Public Works Department.

How Cudahy Relined Its Sewer

Strong industrial waste destroyed the lower sections of the Cudahy, Wis., sewer; clay liner plates corrected the difficulty

By CARL C. SCHABLA
City Engineer

THE engineering department of the City of Cudahy, Wis. (population 10,631, 1940 census), recently devised a useful cost-saving method of salvaging a relief sewer that had distinegrated through constant contact with corrosive waste material from a near-by drop forge company.

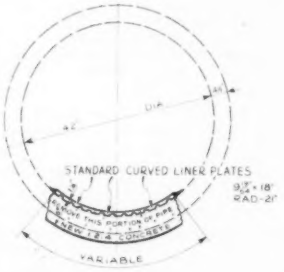
Cudahy, a Milwaukee suburb, installed the relief line in 1935 to handle the overflow from an old 12-inch clay-pipe sewer, which had become too small to handle the combined storm wastes, sanitary sewage, and industrial residue from the iron works. The relief sewer of non-vitreous pipe was constructed parallel to the old clay line, and varied in size from 15 to 48 inches. Overflow connections from the old line completed the relief system.

Increased Quantities Discharged

During the war, the drop forge company discharged greatly increased quantities of industrial wastes — particularly sulphuric acid from pickling vats — into the old pipeline. The 12-inch clay line, unable to handle this increased flow, forced the excess material into the relief sewer. In a short time the invert of the relief sewer had been completely dissolved, allowing the sewage to flow on the earth and gravel.

The strong acidity of the industrial wastes also loosened and released large quantities of the sand and gravel upon which the original relief pipe rested. The undermined sewer arch caused the line to settle in many places, endangering street surfaces. The sediment also blocked an 8-inch sanitary sewer which was intended to carry off all dry-weather flow and domestic sewage.

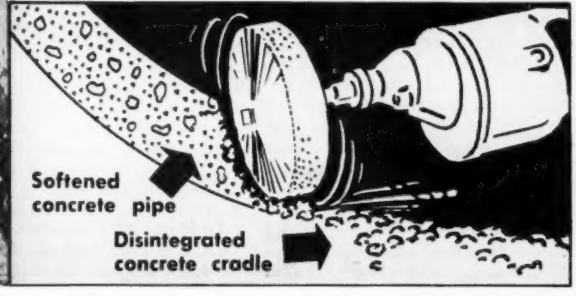
When trouble was reported, an investigation was made. The investigation revealed that vitrified clay sections of the system showed no visible signs of deterioration, while inverts of the newer relief sections were almost completely eaten away by the highly acid waste materials. For this reason, it was decided to replace the 18-inch and 30-inch sections of the relief sewer entirely with clay pipe. In the 36-inch and larger sections, where there was room for a man to work, it was possible to salvage the useable roof of the relief-line pipe, which had not been touched by acid wastes, and replacing only the sewer invert. Inverts were replaced with vitrified clay liner plates. The liner plates were set in fresh concrete in the bottom third of the pipes and joined with an acid-proof asphalt compound.



Two time- and labor-saving devices helped to solve special problems arising from the unusual working conditions of the job. One of these devices was a portable electric hand drill equipped with a rotary steel brush, used to scrub away the soft edges of the old concrete before pouring the new concrete anchorage. The softened portions of concrete, which would not provide firm anchorage for the liner plates, were cut away cleanly and rapidly with this tool.

Compressed Air for Drying

An attempt to solve the problem of obtaining a perfectly dry bonding surface resulted in the construction of an apparatus resembling an oversize dentist's air nozzle. Compressed air was brought through a hose into a special nozzle made of a piece of pipe flattened at one end to form a slot opening. This slot opening was inserted into the spaces between the liner plates, completely drying the surfaces of both of the liner plates and the cement. Immediately after drying, the spaces were filled with an acid-proof jointing compound, the dry surfaces assuring a perfect bond. A strip of this asphaltic compound was also painted on the concrete pipe above the upper margin of the clay liner plates, to protect the concrete from spashing waste material.



Above: How vitrified clay liner plates were used to salvage the 42-inch pipe invert. Left: They were carefully bonded together with an acid-proof asphaltic compound. Below: One special tool was an ordinary electric hand drill to which was attached a stiff wire brush. With this brush, mushy portions of the concrete could be cut away cleanly and rapidly.

Detroit Resurfaces

PHOTO COURTESY OF MICHIGAN STATE HIGHWAY DEPARTMENT

It required night operation only to repave Detroit's Grand River Avenue and still allow the street to carry its normal heavy traffic load during the day.

Sheet-asphalt surfacing over abandoned street-car tracks On Detroit's Grand River Avenue nearly doubles street capacity

By C. H. BROWN
Metropolitan Engineer
Michigan State Highway Department
Lansing, Mich.

GRAND RIVER AVENUE, a major trunk line and arterial street in Detroit, otherwise known as route U. S. 16, now has a potential capacity of 55,000 cars per day using a synchronized type of traffic-light system instead of the 30,000 that was its limit a few years ago. However, the recent installation of the block-type traffic controls has reduced capacity to about 40,000 cars per day. A resurfacing job brought about this stepped-up capacity. The resurfacing covered old car tracks.

Detroit discontinued street-car service on Grand River Avenue in the spring of 1947. The over-all plan was to surface the rough central portion occupied by two street-car tracks with a smooth sheet-asphalt surface, and to replace the street cars with buses.

Although this work might be considered a maintenance operation, its great length, 12.6 miles, dictated that it would be handled best by contract. Since the resurfacing covered a state highway route, the responsibility for the work rested with the state rather than the city. By handling it in this way federal aid also was secured. The cost of the work was $635,000.

The first preliminary step was to remove the street-car safety zones. The second was to plug the track drains with concrete; and the third was to raise hundreds of manholes and valve boxes.

The average width of the car-track resurfacing was 33 feet. This resurfacing consisted of a bituminous binder course and a sheet-asphalt wearing course with a total minimum thickness of 2¼ inches. The specifications called for sheet asphalt because it permitted economy in feathering out at the edges and because it conformed to the prevailing type of street surface now maintained by the city.

Some sections of the avenue were very rough and badly cracked. In such cases, the entire street was resurfaced from curb to curb.

An added feature to the regulation sheet-asphalt surface generally used was the application of dry marble chips to the surface. This increased the anti-skid properties of the surface and lightened the dark color, improving night driving visibility.

How Surfacing Was Laid

The track grooves were first blown out with compressed air, then sprayed with emulsified asphalt, and then filled with sand-asphalt mixture to seal the grooves prior to resurfacing. The whole resurfacing area received a bond coat of quick-breaking emulsified asphalt. The binder course went over the car-track area in two 10-foot lanes 1 inch thick for a total of 20 feet. The sheet asphalt mixture was laid in three 10-foot lanes 1¼ inches thick, feathering out the remaining 1½ feet on each side. On certain limited sections, the resurfacing covered the full width of the street. Barber-Greene spreaders were used.

The bulk of the construction was carried on at night because of the heavy daytime traffic and the need for maintaining traffic during construction. The contractors cleared the equipment off the street each morning to allow complete use of the street during the day. Only at the extreme end of the project near the city limits was it possible to carry on construction during daylight hours, since traffic at this remote end of the work was much lighter.

Ironing out the feathered edge involved a rather heavy expense because it could be done only by hand. There were about 50,000 lineal feet of edge to be ironed in with hot smoothing irons.

By providing a smooth, even street surface, it was possible to step up traffic capacity by manipulation of traffic lanes. Traffic on the two center lanes is now reversed during peak loads. During the early-morning rush, the center lane carries traffic downtown; and in the late afternoon its direction is reversed to carry this same traffic home.

Two contractors handled the work; the Detroit Asphalt Paving Company and the Cadillac Asphalt Paving Company, each having about half the total tonnage. The original contract quantities called for 13,200 tons of binder mixture and 30,000 tons of sheet-asphalt mixture. The unit price on binder ranged from $8.70 to $10.75. The sheet asphalt cost $12.70 to $16.00 per ton.

The work was started October 2, 1947, and was completed August 1, 1948. Work was discontinued during the winter months from December through May. Average production was about 300 tons a night on track-area construction, and about 500 tons a night on full-width construction.

Private Fire Protection

What is an equitable charge for this service?

OFTEN we find, in water-rate schedules, a set of charges for private fire protection. It does not appear in all. Of these rates that we have published during the past several months, less than one-fourth have a reference to them. Nevertheless, since construction and operating costs have risen during the past few years, many waterworks officials have directed their attention to this phase of water-supply financing to see whether it is carrying its share of the burden.

The first question is whether such a proposition is just. The answer is yes. It is fair to make a charge for private fire protection just as it is fair to make a charge for public fire protection. As we have noted previously, water-distribution systems would be much simpler and less expensive if they were designed only for the local domestic and industrial needs. The fact that the water department must supply greater volumes of water for fire-fighting purposes and consequently must build larger mains and storage facilities indicates the need for some sort of charge to finance this added construction.

Of course, the industry is interested not in how much water it uses for fire protection, but how much it can use if necessary. Therefore, most use some type of flat rate. The only advantage of metering would be to control unauthorized use through these fire-fighting outlets. Unfortunately there is much of this unauthorized use. This is the reason that the bulk of the water-works people prefer meters on fire services.

To determine what these charges should be, we have to depend more on precedent and good judgment than on a cold formula. We list below some of the practices followed in cities whose rates have been published in past issues. There is not set formula that tells you how to arrive at the proper charge.

East Orange, N. J., makes a charge for fire lines, although Water Engineer Roswell Roper reports that the department does not receive any public fire-protection charge. Consequently, the East Orange practice may be considered wholly a fire-protection charge.

In Beckley, W. Va., Charles C. Farmer, of the Beckley Water Company, reports a charge of $50 per hydrant per year for both public and private use. He also reports a charge of $100 per year for each 6-inch sprinkler top with no limit to the number of heads. There is no differentiation between public and private fire protection.

In Bay City, Mich., Alex Krzyminski, water superintendent, reports that the city pays his department approximately $10 per hydrant per year for public fire protection, or a sum approximately equal to the private charge for a 3-inch fire service.

In Ashland, Wis., James Snow, Manager of the Ashland Municipal Utilities, reports that the city pays the utility $30,000 per year for service through approximately 284 hydrants and 38 miles of mains. For private service, outside hydrants are charged at a rate similar to that charged for public fire-protection service. For sprinkler systems or standpipes, the charge is as reported in the table.

In Stockton, Calif., the California Water Service Company makes a charge of $1 per hydrant per month for public fire protection. For private fire-extinguishing service, the charge is as listed in the table.

In Galveston, Texas, Superintendent Henry Wilkens, Jr., reports an annual charge of 60 cents per 1,000 square feet of area protected. There is no public fire protection charge.

In Mt. Vernon, N. Y., Commissioner J. Morris Yules reports a charge of $65 per year per private fire hydrant, and a similar charge per private Foamite connection. In automatic sprinkler systems with no inside hose openings, the cost is 10 cents per head per year. Where there are inside hose openings, the charge is as listed in the table.

In Seattle, Wash., Superintendent W. C. Morse reports that the city pays the Department $48,000 per year for fire protection covering 11,000 hydrants and 1,200 miles of mains. Other private charges are as follows:

PRIVATE FIRE-SERVICE CONNECTIONS

CHARGE PER YEAR

	E. Orange N. J.	*Lincoln Ill.*	*Bay City Mich.*	*Ashland Wis.*	*Stockton Calif.*	*Mt. Vernon N. Y.*	*Seattle Wash.*
2"	$.....	$43.20	$10.00	$ 9.60	$.....	$.....	$12.00
3"	15.00	64.80	15.00	12.00	.....	.....	19.60
4"	21.00	90.00	20.00	18.00	48.00	40.00	28.20
6"	39.00	180.00	25.00	24.00	72.00	80.00	40.20
8"	60.00	360.00	75.00	.....	96.00	160.00	.....

PUBLIC FIRE-SERVICE CONNECTIONS

CHARGE PER YEAR

.....	$28.00	$10.00	$57+	$12.00	.....	$ 4.73

Coldwater, Mich.

Rates Per Month

First 3,000 gals. are included with the minimum charge.

Next 2,000	12c	per 1,000 gals.
Next 95,000	8c	" " "
All over 100,000	6c	" " "

Minimum Charge

Meter	
⅝"	$ 1.00
¾"	1.35
1"	1 85
1¼"	2 30
1½"	3.00
2"	4.60
3"	8.75
4"	13.40
6"	26.25

Metered-rate water bills are payable monthly. All bills are set, subject to a 10% increase in the event of non-payment within 10 days of due date. In addition to the above, the following charges are collected for privately owned fire-protective-service connections:

4"	connections	.....$4.00 per month
6"	"	..... 6.00 " "
8"	"	..... 8.00 " "

No such connections to be larger than 8 inches. All such connections following 1939 to be metered.

An annual charge of $45 per hydrant is made to the municipality for fire protection service. This charge is not paid.

All other water used by public agencies is paid for at regular rates except for water used in the municipal building, for curb-stone drinking fountains, and by the street department in its own work of construction and operation of the street and sewer department.

General Data

Population served	9,168
Number of active services	2,749
Number of metered users	215
Number of first-rate users	2,478

Number of fire-protection services	13
Number of fire hydrants	207
Miles of water mains	30.95
Supply	Wells
Storage	30,000 gals. overhead
Treatment	Chlorine
Average demand	1.15 mg
Plant capacity	3.25 mg

Customer Costs (Metered)

3,000 gals. (400 cu. ft.)	$1.00
5,000 " (667 cu. ft.)	1.24
10,000 " (1,333 cu. ft.)	1.62

These rates went into effect in May 1947.

L. E. McQUEEN
Superintendent of Public Works

Salt Lake City, Utah

Rates	*Monthly*	*Quarterly*
9c per 100 cu. ft. for first..	15,000	45,000
8c " " " " " next..	35,000	105,000
7c " " " " " " over..	50,000	150,000
Minimum rate	83c	$2.50

Outside city rates are $2.50 per month and the water is billed at 25c per 100 cubic feet.

There is no charge for municipal use of hydrants. The charge for private use is $4 for a permit and $1 per day. There is no charge for automatic sprinklers.

General data

Population served	200,000
Services (96% metered)	42,197
Hydrants	3,172
Valves	6,394
Miles of mains	523
Supply	Mountain streams and wells
Treatment	Chlorine, ammonia
Average demand	40 mg

Customer Costs Per Month

3,000 gals. (400 cu. ft.)	$0.83
5,000 " (667 " ")	0.83
10,000 " (1,333 " ")	0.83

All revenue from water rates is deposited in the General Fund, and the Water Department receives an operating and maintenance budget each year to carry on this work.

DOW H. YOUNG
Superintendent of Water

Oak Park, Ill.

Rates

Class I (on quarterly basis)
First 9,000 gallons, $3.60 minimum.
All in addition, 40c per 1,000 gallons.
Class II (monthly basis)
Limited to users of 100,000 to 200,000 gallons per month, 39c per 1,000 gallons.
Class III (monthly basis)
Limited to users of 200,000 to 600,000 gallons per month, 33c per 1,000 gallons.
Class IV (monthly basis)
Limited to users of 600,000 to 1,000,000 gallons per month, 33c per 1,000 gallons.
Class V (monthly basis)
Limited to users of over 1,000,000 gallons per month, 30c per 1,000 gallons.
A 10% discount is allowed for payment within 10 days of billing.

General Data

Population served	72,000
Services (100% metered)	12,064
Hydrants	1,125
Valves	984
Miles of mains	107
Supply	Lake Michigan—purchased from Chicago
Treatment	Chlorine
Average demand	5½ mgd
Plant capacity	24 mgd

Customer Costs (Class I calculated monthly)

3,000 gals. (400 cu. ft.)	$1.20
5,000 " (667 " ")	2.00
10,000 " (1,333 " ")	4.00

New rates went into effect January 19, 1948. The water department makes no charge against the village for fire protection in the form of hydrant rental. It has been the practice of the department for many years to transfer funds to the General Fund. In 1948 this amounted to $247,000.

MARSHALL S. DUTTON
Water Superintendent
Oak Park, Ill.

Herkimer, N. Y.

Rates (Quarterly Basis)

First unit	50c
Next 49 units, each	2.5c
" 50 " "	2.0c
" 100 " "	1.6c
" 100 " "	1.3c
" 200 " "	1.1c
Excess units, each	1.0c

(Each unit is equal to 100 cu. ft. or 748 gals.)

To all bills remaining unpaid after 30 days from the date thereof, a 10% penalty will be added, for failure to make prompt payment.

Minimum Charge

Size of Meter	*Per Quarter*
⅝"	$ 2.25
¾"	3.50
1"	5.00
1½"	10.00
2"	15.00
4"	20.00
6"	40.00
8"	60.00

Water Service Outside of Village Limits

An additional 20% will be added to above rates for water service outside the village limits.

This does not apply to contracts for water stand-by service with other municipalities or large wholesale customers outside the village, for whom special rates may be made.

General Data

Population served	12,000
Services (1% metered)	2,150
Hydrants	270
Valves	600
Miles of mains	
Supply	18
Distribution	45
Supply—	
gravity—surface stream with wooded watershed.	
Storage—	
Raw	1 mg
Treated	12 mg
Treatment	Chlorination
Average demand	2 mg
Plant capacity	3 mg

Treated Water Characteristics

$CaCO_3$	84 ppm
Fe, Mn	none
Temp.	50° F.

Customer Costs Per Month

3,000 gals. (400 cu. ft.)	$0.83
5,000 " (667 cu. ft.)	1.75
10,000 " (1,333 cu. ft.)	3.42

These rates went into effect Sept. 1, 1947.

HERBERT W. BACHELDER
Engineer in Charge

Santa Cruz, Calif.

Rates Per Month

⅝" meter....	$1.00 for first 500 ft. or less
¾" "	1.25 " " " " " "
1" "	1.50 " " " " " "
1½" "	2.00 " " " " " "
2" "	2.50 " " " " " "
3" "	4.00 " " " " " "
4" "	5.50 " " " " " "
6" "	7.50 " " " " " "

For service outside the city the minimum charges are increased 25c. Charges above the minimum are as follows:

Inside the City

All over 500 ft. up to 2,300 ft....	$.10 per 100 ft.
Up to 3,000 ft.	.07 " " "
Up to 4,000 ft.	.06 " " "
Over 4,000 ft.	.05 " " "

Outside the City

Each additional 100 ft. and up to 2,000 ft.	$.10 per 100 ft.
All above 2,000 ft. and up to 20,000 ft.	.09 " " "
All above 20,000 ft. and up to 50,000 ft.	.07 " " "
All above 50,000 ft. and up to 80,000 ft.	.06 " " "
All above 80,000 ft. gravity flow.	.05 " " "

In case of non-payment of water bills within 5 days of the time of the serving of a note, the water is turned off from the premises and a $2.00 penalty added to existing charges.

The charge for fire protection is $1.00 per inch of service per month and there is no charge for water actually used in fighting fires. A charge of $1.00 each per hydrant is made to the city.

General Data

Population served	30,000
Services, 99% metered	9,500
Hydrants	650
Miles of main	125
Service levels	3
Storage, treated	70 mg
Supply	River
Treatment	coagulation, filtration, chlorination
Average demand	4 mg
Plant capacity	10 mg

Customer Costs

3,000 gals. (400 cu. ft)	$1.00
5,000 " (667 " ")	1.20
10,000 " (1,333 " ")	1.80

These rates have been standard for many years. However, the city is embarking on a program of improvement and expansion that is in excess of net revenue. This may require a resurvey of the rates.

JOHN C. LUTHIN
Superintendent, Water Department

Milford, Conn.

Rates—Yearly

A minimum charge of $4.50 per quarter will be made on all yearly metered services where water use is less than 1,000 cubic feet per quarter.

	Per Quarter
First 1,000 cu. ft. or less through each meter	$4.50
Next 3,000 cu. ft. through each meter, per 100 cu. ft.	0.25
Next 24,000 cu. ft. through each meter, per 100 cu. ft.	0.18
Next 70,000 cu. ft. through each meter, per 100 cu. ft.	0.13
Over 100,000 cu. ft. through each meter, per 100 cu. ft.	0.08

Rates—Seasonal

(Summer season extends from April 1 to December 31 following.)

The minimum season charge for premises previously occupied is $15.00 entitling the consumer to a maximum of 3,000 cubic feet. A bill for this amount plus $1.00 for setting the meter will be rendered upon installation of meter. As soon as 3,000 cubic feet have been registered on any season meter, bills will then be issued for the excess water used.

	Per Season
First 3,000 cu. ft. or less through each meter	$15.00
Next 15,000 cu. ft. through each meter, per 100 cu. ft.	0.25
Next 72,000 cu. ft. through each meter, per 100 cu. ft.	0.18
Next 210,000 cu. ft. through each meter, per 100 cu. ft.	0.13
Over 300,000 cu. ft. through each meter, per 100 cu. ft.	0.08

General Data

Population served—	
Summer	30,000
Winter	16,500
Services (52% metered)	8,220
Hydrants	465
Miles of main	166
Supply	Lakes
Treatment	Chlorination
Average demand	1.75 mgd
Plant capacity	4.0 mgd

Customer Costs Per Month (Yearly Only)

3,000 gals. (400 cu. ft)	$1.67
5,000 " (667 " ")	2.33
10,000 " (1,333 " ")	4.00

Milford is largely a summer resort and has to make special arrangements for these seasonal customers. For the average use, the seasonal cost is roughly equal to the year round cost.

G. N. VAN HORN
Assistant Secretary
Milford Water Company

The Municipal Bond Market

Bond yields compared for recent offerings of ten cities

By **FREDERICK L. BIRD**
Director of Municipal Research
Dun and Bradstreet, Inc.

THE pronounced upward trend of the municipal bond market that began after the general election of last November continued well into January, *The Bond Buyer's* 20-bond index dropping from 2.45% on November 4 to 2.15% on January 20. Thereafter a mild reversal of trend developed, apparently because prices had overdiscounted the prospects for an increase in federal income taxes. By February 10 the index had risen to 2.20%. Postponement of action by Congress on the proposal for a tax increase, and the likelihood of growing sentiment in Congress against an increase if more signs of a recession in business appear, leave municipal bond prices somewhat vulnerable.

As the national economy moves out of the war and postwar boom, the basic quality of municipal bonds will become a more evident and effective factor in the municipal bond market. Underwriters and investors will show more discrimination than in the past several years, and municipalities which are fortunately situated economically and have planned and managed their finances well will be the beneficiaries.

A survey of recent municipal bond offerings, in fact, discloses that even at the present time there is somewhat more selectivity in the purchase of municipal bonds than is generally recognized. Indexes, useful as they are in reflecting average price levels and trends, shed no light on the range of prices. Likewise, effective interest rates—the actual interest rate on a bond issue determined by taking into account the coupon rate or rates and premium or discount received—are not suitable for comparison because they are influenced by the length of term over which the bonds are scheduled to mature. One practical means of comparing municipal bond prices is to note the yield basis on which new bonds of a given year's maturity are offered by dealers to investors.

Recent Bond Sales Compared

To secure such a comparison, a more or less random selection has been made of ten cities of over 50,000 population which have sold moderate-sized issues of general obligation bonds in the first six weeks of 1949. The fact that all the sales occurred in a short period in which there was relatively little fluctuation in the general price level provides a good degree of comparability. The approximate offering prices to investors, on a yield basis, of bonds maturing in 20 years were as follows—ranked in order of ascending yields: Madison, Wis., 1.65%; Newton, Mass., 1.75%; Lynn, Mass., 1.80%; Nashville, Tenn., 1.80%; Minneapolis, Minn., 2.00%; Providence, R. I., 2.05%; Dallas, Texas, 2.10%; San Diego, Calif., 2.20%; Detroit, Mich., 2.30%; Beaumont, Texas, 2.60%.

This wide range, with the highest rate 57% above the lowest, by no means represents the extreme in the period for all local governments issuing bonds. Twenty-year bonds of Lower Merion School District, Pa., were offered at 1.50%, while scattered small issues ranged upward of 3% for bonds due in 20 years. The ten cities, however, being somewhat homogeneous in the sense that they represent sizeable, well-established urban places, serve better to center attention on the discrimination being given to municipal credit.

Good Management Important

To present case histories that would disclose the probable basis for the varying favor with which investors view the bonds of these cities is beyond the scope of this summary, but a few of the more obvious differentials may be noted. Madison, a state capital and educational center, and Newton, a well-established, growing, high-class residential suburb, are stable communities with low debts, good management and limited fiscal problems, that typify high quality in municipal bonds. Lynn's very low debt and planning of rapid debt retirement with progressively declining charges to future budgets combine with gains in economic resources to satisfy critical investors. Nashville's economic stability as a state capital and educational and commercial center and ability to keep its debt moderate and its finances consistently on a firm basis are influential factors.

Minneapolis, formerly ranking somewhat higher in the estimation of investors in municipal bonds, qualifies well in the scope and stability of its economic resources but is handicapped by an outmoded form of government and an inadequate revenue system, defects which should be readily susceptible of correction. Providence, sharing somewhat in the static character of New England's economy, clings to its traditional 25-mill, limited tax rate and for years has not quite been able to make ends meet sufficiently to obviate the need for bond refunding. While both cities continue to enjoy a good market for their bonds, they do not measure up to the highest standards for security.

Dallas and San Diego are representative of those places which have had great influxes of population during and since the war, necessitating rapid expansion of services and major capital improvements. Both cities have kept their finances in good order, held their debts to a moderate level, and engaged in resourceful long-range planning. The fact that their bonds sell in the middle range appears to be an indication of some degree of uncertainty on the part of investors as to the stability of communities that have undergone rapid expansion. Texas cities have the additional obstacle of a tax rate limit which includes taxes for the service of debt—a device to save taxes which is somewhat expensive because prudent investors view it as a potential hazard.

Detroit's position further down the scale, despite its moderate debt and partial pay-as-you-go policy of financing improvements, illustrates the difficulty that a city encounters in living down a default record and probably reflects investor appreciation that sound fiscal management is more difficult in a city dominated by a rather highly cyclical industry. Although Beaumont has a very creditable financial record, the relatively high yield on its bonds indicates some degree of investor concern over the increase in the city's over-all debt load to a moderately heavy level, the legally restricted revenue system and the possible instability arising from booming growth.

Obsolete Contract Clauses Increase Prices

(*Continued from Page 76*)

facturers bid on these goods with so-called "escalator clauses," which stated a price for the job with a possible increase or decrease depending on an index, determined by federal agencies, for the particular industry involved. Frequently a maximum percentage of increase was indicated.

Manufacturers of major equipment items are still in a dilemma when it comes to pricing their products. Contractors for construction work extending over considerable periods of time are in a similar quandary. With our present national—and international—situation who can predict the future with enough courage to back up his prices for long periods? Material markets are still unsteady and, with such Supreme Court decisions as the one on cement, who can look into the crystal ball and see the price of cement, coal, or steel for the next year or two?

In the light of the things enumerated

—and there are many similar items of uncertainties—many manufacturers of capital goods are now quoting with "price protection" clauses; the price under such an agreement is fixed as the established price of the product at the time of shipment. Usually these clauses carry a maximum adjustment of 20% up or down to the price in effect at the date of the proposal.

Many cities, because of time-honored custom or legal requirements, cannot buy or contract on an escalator or price protection arrangement. It is felt that steps should be taken to make it legally possible for them to do so. It will, in many cases, be to their advantage financially to do so, because, in the absence of some such protective feature, a manufacturer must necessarily anticipate increased costs and they will be reflected in the quoted price.

Separate Equipment Contracts

In arranging for public improvements, some cities purchase major items of equipment in separate contracts. Unless these units are large or otherwise unusual they are commonly installed by a general contractor, whose work includes plant construction. Frequently installation is under the maker's supervision. Other cities let a general contract for the entire project which includes furnishing and installing machinery. Manufacturers much prefer the first method of letting the equipment part of the improvement for several reasons: first, it removes a third party from the purchasing and from a possible division of responsibility; second, it usually is cheaper for the city, for the general contractor may add a percentage for handling and profit; third, it is more likely to give the city the kind of equipment it wants, for it will be the sole judge in its selection; and fourth, it removes from the manufacturer's consideration the financial character of the general contractor and his ability and willingness to pay his bills promptly.

Contracts with governmental units usually call for a performance bond. Most of these bonds are so worded that they cover only the provisions of the regular contract documents. There is no objection to such a bond. Occasionally, however, the performance bond includes things not in the regular contract (such as consequential damages, patent payments, etc.), thereby increasing the liability of the contractor and enlarging the scope of the contract. The innocent-looking performance bond is not just another paper which must be signed; it is a vital part of the contract. It should not be so worded as to increase the liabilities beyond those described in detail in the body of the contract and specifications.

Louisville Students Study City Planning

(Reprinted from *The School Executive* for February 1949)

HIGH-SCHOOL graduates leaving the Louisville, Ky., public schools take with them something in addition to their academic and vocational skills. Through the inclusion of a special unit on city planning in the senior-high-school course, students are being made aware that the city *is* its people and is *for* its people. To develop a civic-minded citizenry alert to the problems of city planning, classes in *Problems of Democracy* devote their attention to the life, work, and play of their city, exploring the hidden arteries of the community as well as the obvious mainstream.

One of the desired outcomes of this unit is to make the students realize that vision, research, planning, and education of the public to the municipal needs are required to obtain major public improvements. It is toward this goal that the schools microscope the city of Louisville and ask these questions: What is city planning? Why does it concern us?

The unit of study unfolds with a consideration of the geographical makeup of the city highlighting the size, nature, and distribution of the various districts. That the community represents a great diversity of industry is evidenced by a listing of the manufactured products. From a general discussion of the community the unit moves on to study specifically the problems of the city, and the organizations which study the problems of Louisville, promote its welfare, and lay plans for its future. The group turns to a study of their experiences of other communities which have solved municipal problems successfully. Personalizing the unit of study, students delve into the problems of their own neighborhoods, critically appraising all features good and bad, and recommending improvements for more efficient and harmonious living. The unit of study closes with a discussion of the individual's part in planning for Louisville's future.

Working within the framework of this unit, the teacher has great freedom in expanding the work to meet the interests of boys and girls. Discussion and planning is abetted by the use of films, speakers, books, and periodicals. An indispensable aid to the whole unit is THE AMERICAN CITY, the leading national magazine in the field of urban government, city planning, and municipal improvements.

The Louisville Public Schools are to be saluted for their concern about their city and their desire to improve community living. Students graduating from the high schools go forth with a greater knowledge of what makes their city tick and how they, as citizens, can add to its service and its splendor.

Urban Studytours Planned For Europe and Latin America

TWO foreign studytours are planned for the summer of 1949 which may be of interest to municipal officials and those concerned with planning and housing affairs in the United States.

One studytour, to be led by Hermann H. Field, architect and Director of Building Plans at Cleveland College of Western Reserve University, will focus attention on the problems of reconstruction, urban planning, and building in Europe, against the background of economic, social, and political developments. Countries to be visited include Sweden, Czechoslovakia, Poland, Italy, and England. Of special interest will be four days' attendance at the Eighth International Congress of Modern Architects in Bergamo, near Milan.

The all-inclusive cost for 46 days in Europe, including tourist steamer, rooms, meals, transportation, etc., from July 6 to September 6, is about $1,475.

Another studytour will blaze a 10,000-mile trail through South America, and will feature the recent outstanding programs and developments in major urban areas. This ten-week summer-session tour, for which full university credit will be given, is scheduled to begin on June 20 in New York City. Prof. J. Marshall Miller, of the Planning and Housing Division, School of Architecture, Columbia University, will be the director. The proposed itinerary includes stops in Cuba, Colombia, Ecuador, Peru, Bolivia, Chile, Argentina, Uruguay, Brazil, Venezuela, and Puerto Rico. Travel will be by air between principal cities. Expenses for the complete trip will be about $1,175.

Further information about both tours may be obtained from World Study Tours, Columbia University, Travel Service, 2960 Broadway, New York 27, N. Y.

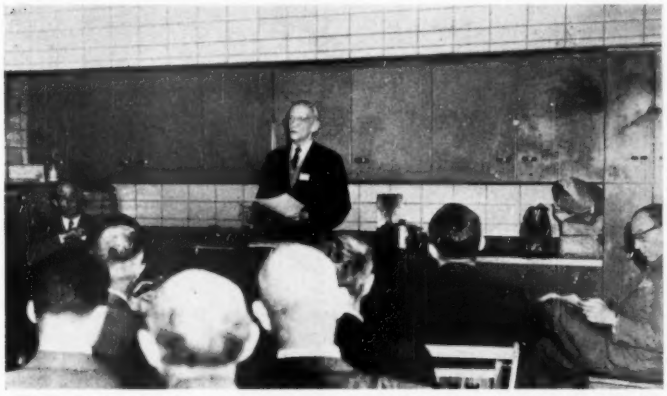
Annual Index to Contents 1948

Published separately as an 8-page leaflet, it is available without charge to any subscriber for *The American City* on request.

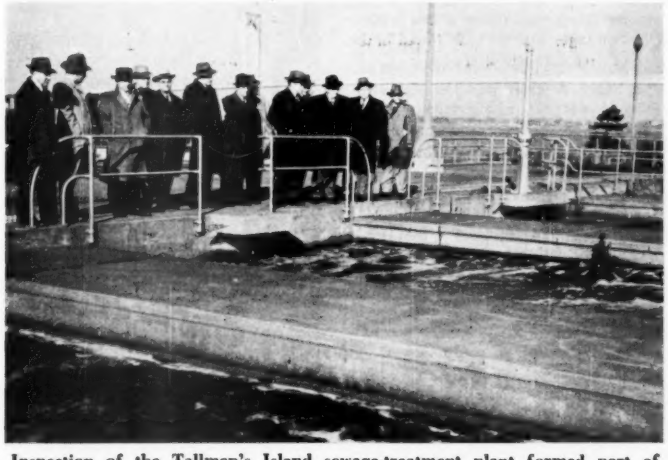
How Sewer-Service Charges Should Be Calculated

Readiness-to-serve as well as to use presented as fundamental in rate calculation

THE total charge that forms the basis of a sewer-service rate should be equitably distributed between the charge for "readiness to serve" and the charge for sewerage use. This was one of the principal points emphasized by Henry W. Taylor, New York City consulting engineer, before the American Public Works Association New York-New Jersey meeting recently. The meeting was held at the Tallman's Island Sewage Treatment Plant. Frederick H. Zurmuhlen, New York City's Commissioner of Public Works, was chairman.



H. W. Taylor tells how to frame a sewer service charge. At the right is F. H. Zurmuhlen, Commissioner of Public Works, New York, and meeting chairman. At left is I. J. Casey, Jr., Town Engineer, Irvington, N. J., Chapter President.



Inspection of the Tallman's Island sewage-treatment plant formed part of the afternoon program.

Mr. Taylor directed his attention specifically to the problems of the New York metropolitan area. Of the 432 municipalities in the United States financing sewerage systems by the service-charge method, four lie in New York and nine are in New Jersey.

I. Review Statutory Limits

The first step in approaching a sewer service charge procedure requires the review of the statutory limitations in each state and community. This review should also include the possibility of special charters for the cities involved.

New York has two laws applying to sewer-service charges: one covers cities, and the other, villages. The wording of both is practically the same. Both allow considerable range in determining the basis of making the charges. Both establish these charges as a prior lien on the property; demand that separate sewer funds be established and that this fund be used only for management, maintenance, operation, repair, enlargement, and replacements, and for interest on bonds and their amortization. Both laws, however, exclude the possibility of using sewer funds for extensions of the systems into unsewered areas.

New Jersey law is directed toward sewer authorities. It outlines the procedure for a single municipal unit, a county or a combination of these subdivisions of the state. This law also provides that if the sewer-service charge is not paid, interest shall accrue thereon at the rate of 1% per month until paid, that the charge and interest shall constitute a lien on the property. At its discretion, the sewerage authority may either disconnect the sewer or turn off the water, or may make collection in a civil action. The bonds issued by the authority, are not an obligation against the municipal unit, county or state.

One classic illustration of a sewer authority exists in New York. This is at Buffalo, and was established by special state legislation. It provides for a separate authority, which takes over the existing investment from the city proper, constructs new sewerage facilities, issues its own bonds which are neither an obligation of the city or state, operates its own system and establishes the rates at which sewer service will be charged, and has the right to use such existing municipal departments or personnel as would avoid duplication. This covers billing, clerks, and purchasing personnel of the Corporation Counsel and the City Comptroller's office.

II. Ready-to-Serve Factor

The next step presented by Mr. Taylor was the ready-to-serve factor men-

tioned previously. He compared it to the fire-protection factor in a water rate. In a well-designed water rate, fire protection is chargeable against property in proportion to its value, whereas the actual use of water should be charged on the basis of volume used.

In the case of the sewer system, some properties are not connected to the sewers. Nevertheless, the sewer is available for connection when the owner so desires. The presence of the sewer increases the value of his property even though he may be temporarily served by an existing cesspool or if the property has not yet been developed for domestic, commercial, or industrial purposes. The proportion of the charge which should be allocated to property can be determined by no rule of thumb, but by a careful study of each case. In the case of the Buffalo Sewer Authority, the proportion of the total charge applied to real-estate assessments has been set at 45% of the total required. In New Jersey, there seems to be no provision for collections from vacant lots or properties not connected either to the water or sewer system.

Combined sewers present another problem. The storm-water element is obviously a property charge, since no individual use of the system is involved. Storm sewers provide a means of protecting the community against flooding, against unhealthful conditions and property destruction. They bear no relation to the individual user of the sanitary feature.

In New York State, Mr. Taylor pointed out that if exemption is to be obtained allowing bonds to be issued beyond the taxable limit, the revenue to pay for the bonds must not come from any *ad valorem* tax on the property. However, the escape from this provision is the front-foot charge, which in essence is a flat rate not based on property value.

III. Sewer Use Factor

The next element in the base rate applies to a use charge related to two separate factors: the quantity of sewage and the quality or strength waste discharged.

For normal domestic sewage, the rate can be based on water used, with adjustments recognized for water not reaching the sewer. Industrial wastes, however, require a surcharge to compensate for the extra cost of treatment if this is needed. Mr. Taylor recommended that the surcharges contain two classifications as follows:

Waste A—Containing no toxic substance and which can be treated after dilution with normal sewage.

Waste B—Containing toxic substances and/or requiring pre-conditioning before being discharged to the sewer.

The rate for Waste A would be the normal quantitative service charge plus a surcharge based on excess suspended solids, BOD, chlorine demand and color.

The rate for Waste B would first demand pre-treatment, such as detention to spread the flow over 24 hours, lime conditioning or lime and chlorine treatment, and other similar pretreatment. The effluent would then be regarded as Waste A, and a suitable surcharge developed to offset its remaining qualitative characteristics.

In his paper, Mr. Taylor listed the sewer-service charges now in use in New York and New Jersey. He also included the state laws governing each, and presented formulae now used to determine a fair charge for industrial wastes.

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The Scoopmobile, a product of Mixermobile, Inc., Portland, Ore., loads a truck in a narrow alley. Front-end loaders permit efficient backyard collection.

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2. Large containers, such as oil drums, which are often used, can very easily be dumped into the hopper. This eliminates dumping onto the pavement and shoveling, as was previously done.

3. This machine, being a three-wheeler, is very flexible and easily maneuvered into position. The operator has good control of the machine and the bucket at all times.

4. Since we started to use Scoopmobiles to load rubbish, we have increased the output and are much better able to keep a schedule than when all the work was done by hand. Since the amount of refuse handled per man-hour has been increased, we have made a saving in dollars and cents, as well as made work easier for the men who had to do the loading.

We now have four of those machines. The fourth is being used for yard work and for other purposes, such as loading materials. It is also used as a replacement for one of the others that might have to be placed in the shop for repairs. We have a fork attachment for this extra machine, and very often use it now for lifting our voting machines on and off trucks. These weigh approximately 1,000 pounds each.

J. H. MOORHOUSE
Superintendent of Public Service
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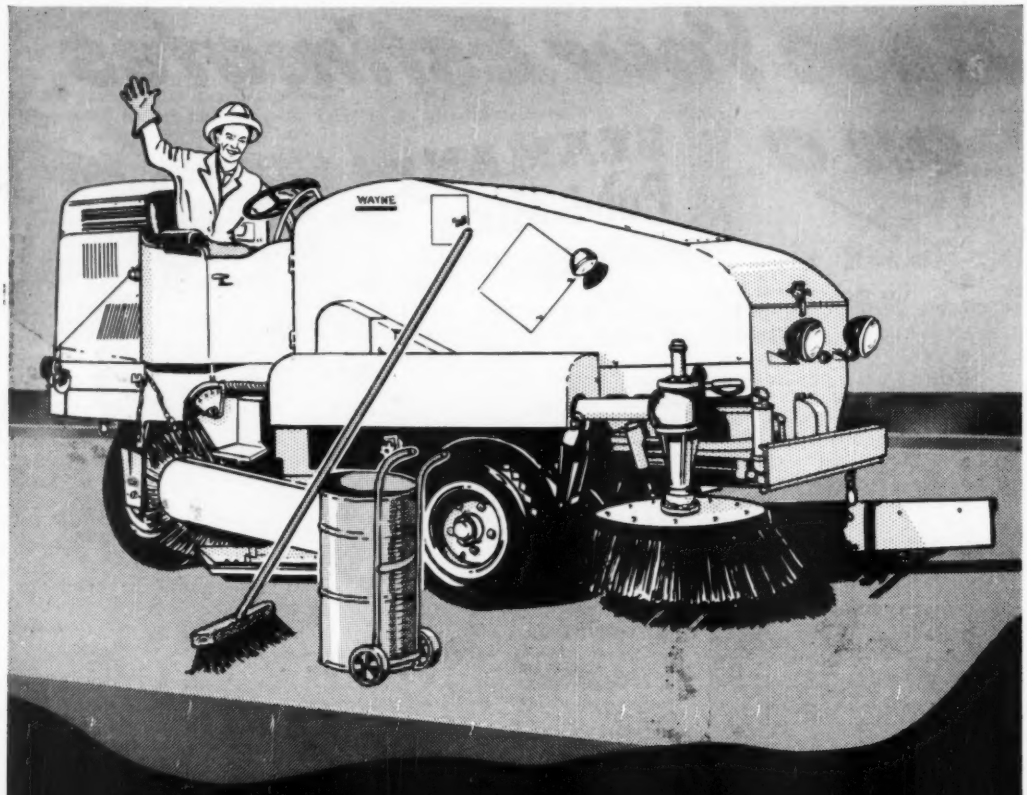

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Zoning and Planning Notes

Edited by NORMAN WILLIAMS, JR.

Local Retail Uses—Overlays

NEW YORK. *Gilchrist Realty Corporation* v. *Village of Great Neck Plaza*, 85 New York Supplement (2d) 41 (New York Supreme Court, Nassau County, November 30, 1948).

MINOR decisions, unimportant in themselves, often raise the most important zoning problems, and incidentally give a striking illustration of the general ignorance among lawyers about zoning. A zoning device may be adapted to current needs, and may develop into a technique of the first importance—and yet be held invalid, quite casually, in some local court. In the present case two of the most important current devices have been thrown out of court:

1. Local retail districts—multiple-dwelling districts, with neighborhood shops and services limited to the ground floor.

2. Overlays—regulations restricting particular uses to special areas, with different boundaries from those in the regular zoning districts.

In Great Neck, Long Island, the apartment-house district permitted apartments and hotels, and also various forms of less intensive residential development—two-family detached houses, boarding and lodging houses, and hospitals. When it was desired to permit the usual local retail uses in the ground floor of apartments, the permissive provision was inserted directly in the apartment-zone section of the ordinance, by a clumsy device. Under the wording adopted, it was first stated that, within that section of the apartment district where apartment development had actually taken place, certain retail businesses would be permitted on the ground floor of apartments fronting on certain streets; then those streets were specifically listed, by name and block; and then the list of permitted retail businesses was added at the end, with a reference back to "those sections of the apartment districts above mentioned"—obviously referring to the sections where apartments were in existence. This list of local retail uses included twenty-two which were obviously appropriate for ground-floor stores in apartment buildings, including "real estate and other offices"—and also (in the middle) mentioned "office buildings."

As usual, the difficulty in enforcing the regulations came at the edge of the district. The owner of a vacant corner lot, situated within the apartment district but opposite three corners zoned and used for business, wanted to construct a building for offices, banking, a musical instrument business and/or others of the listed retail uses, but without any residential space. A suit was therefore brought for a declaratory judgment that the ordinance was invalid in so far as it contained any restrictions on construction of office buildings in an apartment district. The lower court here held for the plaintiff, in a very confused opinion.

Since the ordinance contained apparent internal inconsistencies, there were two possible sensible decisions. Despite the odd and clumsy arrangement, the over-all purpose was clearly to limit local retail uses to the first floor. Accepting this, the reference to "office buildings" could be treated as merely a mistaken choice of phrase in referring to offices; and in that case the latter should, like everything else, be limited to the first floor. Or, in view of the other mention of "offices," the reference to office buildings could be held to carve out an exception to the general limitation to first-floor use. The Court's actual decision in favor of the latter alternative may thus be justified.[1] If the opinion had stopped there, it would have proved no more than that a badly-drawn ordinance is likely to cause trouble.

Instead the judge went on with some further thoughts which, if ever accepted as serious precedent, could result in real trouble. In addition to holding that the wording of the ordinance did not in fact forbid office buildings in apartment districts, he stated that the whole scheme of regulations set up here would be invalid, for two principal reasons.[2] The provisions permitting retail business on the first floor of apartment buildings, and forbidding the same uses higher up, were simply held unconstitutional in toto. Moreover, the use of overlays was held illegal, on the ground that it was contrary to the provision in the enabling act requiring uniform regulations for each class of buildings within each district.

LOCAL RETAIL ZONING

Obviously no residential area can provide convenient living unless the retail business necessary for daily shopping is available nearby. Yet the existing techniques for residential zoning provide no really satisfactory way to solve the problem. With the increasing number of large-scale residential developments, the problem is becoming acute. Three alternative techniques are available. First, the residential zoning regulations themselves could permit the introduction within that zone of a limited amount of retail business, under careful safeguards. While probably practicable for the large developments, this would raise serious problems in areas where each lot is developed separately. Second, under a system of prior administrative supervision, exceptions permitting retail uses where appropriate could be granted by the Planning Commission.[3] However, the most frequent device is to create a specific zone for local retail stores. In one- and two-family residential areas, the neighborhood shopping center is the appropriate type of retail development; in apartment areas, retail shops on the ground floor along main traffic arteries are the general rule. Recognizing this, a majority of recent city zoning ordinances have set up local retail districts, permitting limited types of shops and services on the first floor of multiple dwellings. In effect this is a multiple-dwelling zone with special use regulations for the first floor—particularly when use and bulk are jointly regulated under a one-map system. For those (including most lawyers) accustomed to approach problems in terms of property rights, it is difficult to see why an owner should have a right to install a certain use on the first floor, but not on the second. Yet ground-floor retail stores in an apartment are a special type of use, usually distinguishable from general retail stores on several grounds—attractiveness, likelihood of outdoor advertising, and especially traffic-generating capacity, both pedestrian and vehicular. If ground-floor local retail regulations are held unconstitutional, apartment areas needing such uses will have to be zoned for general retail business. Such a step will both tend to cause deterioration of the character of apartment development, and also increase the usually huge amount of over-zoning for business uses.

Moreover, the general principle of vertical zoning introduced by local retail regulations is capable of wider application. The possibilities for buildings designed for different uses at different heights have been emphasized by recent developments in architectural thought. For example, in a recent Cincinnati building[4] the first floors are used for a department store, with a hotel situated above. According to other suggestions, in the larger cities the future may see buildings with garages in the basement, then several floors of offices or even very light manufacturing, and

(*Continued on Page* 129)

1. Even though it is clear that the judge did not realize that the reference back to "those sections" of the apartment districts incorporated by reference the first floor limitation.

2. Moreover, the list of permitted retail uses included at the end the phrase " or other similar types." This is a frequently used device, and perfectly clear in the context; yet it was held invalid as an improper delegation of power to the Board of Appeals. While that is at least arguable, it is difficult to follow the additional point that somehow this also invalidated the whole peculiar arrangement for local retail uses.

3. Since such decisions are part of the process of planning a city's land use, the Planning Commission will normally be a more appropriate agency for this work than the Board of Appeals.

4. See *The Architectural Forum* for December 1948, pages 81-96.

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Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Sound Trucks and the United States Supreme Court

LOUDNESS and raucousness is not a part of the right of free speech, and, accordingly, does not fall within the protection of the First Amendment to the Federal Constitution. With its decision on January 31, 1949, in the case of *Kovacs* v. *Cooper*, the Supreme Court of the United States added a further but, it is submitted, a proper limitation to our constitutionally guaranteed right of freedom of speech. Reduced to its simplest terms, the decision means that municipalities may bar those sound trucks from city streets which operate "loudly and raucously."

The case arose in Trenton, N. J. *Kovacs* was convicted of violating a sound-truck ordinance in effect in that city which provides that it is unlawful to operate a sound truck on Trenton streets which emits loud and raucous noise. The conviction was affirmed by New Jersey appellate courts.

Five separate opinions were rendered by the U. S. Supreme Court in the *Kovacs* case. Mr. Justice *Reed* announced the majority judgment of the Court and rendered an opinion which was joined in by the Chief Justice and Mr. Justice *Burton*. Mr. Justice *Reed* first noted that the words "loud and raucous" are not vulnerable to the charge of vagueness or indefiniteness. Those words, the opinion recited, "have through daily use acquired a content that conveys to any interested person a sufficient accurate concept of what is forbidden."

Two Decisions Consistent

Notwithstanding the existence of a certain amount of doubt as to the effect of this decision when compared with the 1948 decision of the Court in the case of *Saia* v. *People of the State of New York*, it is believed that the two decisions are entirely consistent and that they both can be applied with equal consistency by municipal officials. It will be recalled that in the *Saia* case, the Court declared an ordinance of the City of Lockport, N. Y., unconstitutional, which required a permit from the Chief of Police as a condition precedent to the operation of a sound truck.

Justice *Reed* in his opinion drew a careful distinction between the ordinance of the City of Trenton and the one which was held to be fatally defective in the *Saia* case. One of his primary distinctions is that the Trenton ordinance placed no previous restraint, nor imposed any censorship, or possibility thereof, upon a guaranteed freedom. The ordinance under which *Kovacs* was convicted made it unlawful to operate a sound truck which emitted loud or raucous noise. In the *Saia* case, the ordinance required a permit from a city official, for whom no adequate standards had been established, *prior* to the operation of a sound truck on city streets. Insofar as the application of the police power to the sound truck is concerned, the following language provides a note of encouragement to municipal officials striving to solve the problems created by the need for peace and quiet for the city's populace and the conflicting desire to engage in the exercise of a claimed constitutional right:

> The police power of a state extends beyond health, morals and safety, and comprehends the duty, within constitutional limitations, to protect the well-being and tranquillity of a community. A state or city may prohibit acts or things reasonably thought to bring evil or harm to its people.

Interpretations Differ on Local Ordinance

Mr. Justice *Jackson*, a former corporation counsel of Jamestown, N. Y., concurred separately, but viewed the problem in a similar light to that with which he viewed the ordinance in the *Saia* case in which he had rendered a separate dissenting opinion. The sound truck, he said, is a device separate and apart from all other matters to which the police power of a city may extend and the law relating thereto is "a law unto itself." He said:

> . . . operation of mechanical sound-amplifying devices conflicts with quiet enjoyment of home and park and with safe and legitimate use of street and market places . . . it is constitutionally subject to regulation or prohibition.

A warning note was sounded, however, when he predicted that municipal officials would be confused as to the extent to which sound trucks could be regulated in view of the *Saia* case. It should also be observed that Justice *Jackson* believed that the Trenton ordinance constituted an absolute bar to any sound truck.

Also concurring with the majority, Mr. Justice *Frankfurter* used this occasion to lament the use of the phrase "the preferred position of freedom of speech," since the use of such phrase resulted in the expression of a "formula," the application of which, he said, resulted only in "mechanical jurisprudence." His point appears to be that the attorney for *Kovacs* argued, artificially, that freedom of speech means the right to communicate; that the operation of a sound truck is one form of communication; and that, therefore, that particular form is protected by the constitution in the same manner as any other means of communication. Actually, Justice Frankfurter believed, with the dissenters, that the *Saia* case had been overruled.

Justices *Black*, *Douglas* and *Rutledge* vigorously dissented in an opinion rendered by Justice *Black*. Their chief objection was that the record in the case before them did not disclose that *Kovacs* had, in fact, violated the ordinance since there was no proof of "loudness or raucousness." This, they said, meant that the New Jersey courts had interpreted the Trenton ordinance to constitute a complete bar to "all" sound trucks. Nor would proof of loudness and raucousness remove the dissenters' objections, for they say,

> The New Jersey ordinance is *on its face*, and as construed and applied in this case by that state's courts, an *absolute* and *unqualified prohibition* of amplifying devices on any of Trenton's streets at any time, at any place, for any purpose, and without regard to how noisy they may be.

Other language in the dissent is of such importance, however, that a city attorney should find it relatively simple to draft an ordinance which would satisfy the dissenters.* For example, the following words are very explicit in their suggestions:

> . . . cities may restrict or absolutely ban the use of amplifiers on busy streets in the business area A city ordinance that reasonably restricts the volume of sound, or the hours during which an amplifier may be used does not infringe the constitutionally protected area of free speech.

Conclusion

In conclusion, it might be observed that the refusal of the Supreme Court to extend the doctrine of the *Saia* case to the *Kovacs* case, and its careful distinction between the two, will serve to clarify many current misunderstandings on the part of various courts as to what our proper municipal law is, and should be, with respect to sound trucks.

---

* It is believed that the model ordinance set forth in NIMLO Report No. 123, "Municipal Control of Noise, Sound Trucks, Sound Advertising Aircraft, Unnecessary Noises, Model Annotated Ordinances," fully meets all constitutional requirements as prescribed in both the *Saia* and *Kovacs* cases. Mr. Justice *Reed* cited this report in his opinion for the majority of the Court.

See also article by Mr. Rhyne, "Sound Trucks and Freedom of Speech," in THE AMERICAN CITY for August 1948, page 120.

Annual Index to Contents 1948

Published separately as an 8-page leaflet, it is available without charge to any subscriber for *The American City* on request.

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CROUSE-HINDS NEON

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Needed at all extra-busy corners, these signals are invaluable at complicated intersections, especially where it is hazardous for pedestrian and vehicular traffic to move at the same time in the same direction. Install them in the direct line of pedestrian vision at one of your "problem" intersections and note the outstanding improvement in pedestrian control.

These NEON signals are ideal for use as vehicle information signs, such as ROUTE 20⟶ , ONE WAY⟶ and NO LEFT TURN. Their striking appearance catches the eye of the motorist in locations where ordinary signs would be "lost" in distracting surroundings.

The weatherproof Crouse-Hinds NEON Pedestrian Signals and Traffic Signs are cast aluminum, built to withstand heavy duty. The letters are all red or a red and green combination, 4-1/2" high. Available in one-line and two-line types, these signals can be mounted like a conventional traffic signal, on top of a post, on bracket arms, on a span wire, or on a mast arm.

Write for full details. Ask for descriptive circular, Type TNO. It contains catalog listings of the 14 variations that are regularly furnished.

A Nationwide Distribution Through Electrical Wholesalers

Crouse-Hinds Catalog 226 lists a complete line of traffic signals, beacons, flashers, and a series of controllers designed to help you solve your traffic control problems . . . from simple installations up to the most complex heavy traffic problem. Send for your copy.

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CONDULETS
FLOODLIGHTS
TRAFFIC SIGNALS
AIRPORT LIGHTING

Outdoor Lighting

New Street Lights for 240 Indiana Towns

Washington and Jackson Streets in Greencastle, Ind., after G-E new "white-way" lighting installation. The system consists of Form 101 D luminaires mounted 23 feet 8 inches above pavement, staggered at 60 feet.

APPROXIMATELY $700,000 worth of General Electric's white-way equipment has been purchased by the Public Service Company of Indiana as a part of its street-lighting modernization program covering 240 towns and cities in the state. Included in the purchase were 2,000 ornamental fixtures, and 5,600 pendant luminaires, as well as transformers, controls, etc.

Communities included in the program, which is expected to be completed in 1949, range in population from 145 to more than 60,000. Lighting facilities in these communities range from a single, small fixture at the main intersection in the smallest community to 2,200 fixtures in the largest.

Public reaction to the expansion program has been tested in two of the towns already equipped with new lighting fixtures. Forty-nine luminaires with 6,000-lumen lamps have been installed in the business section of Greencastle (population 3,000). They are mounted in upsweep brackets from Union Metal poles. Merchants in the once poorly lighted section report better business at night.

The downtown streets of Brazil (population 8,000) have been lighted by 68 luminaires with 6,000-lumen lamps. These have been mounted on poles placed at 80 feet apart on opposite sides of the street. The police predict the accident rate will drop in consequence.

According to engineers of the Indiana utility that made a 24% reduction in street-lighting rates two years ago, the $2,000,000 modernization program was launched as the result of the findings of a committee it had organized to:

1) study the best lighting methods available
2) standardize engineering practices dealing with street lighting
3) organize a system of maintenance progress.

To carry out the aim of standardization, the committee worked out an engineering brochure which gave general instructions to the districts on the type of luminaires needed.

New Modern Lights Cut Night Accidents

SINCE the summer of 1948 there have been no night accidents on First Avenue in Cedar Rapids, Iowa, a progressive and rapidly growing industrial city of 75,000 in east central Iowa, in the heart of a rich agricultural area. A new, modern, and efficient street-lighting installation was completed last summer. Because of the heavy pedestrian and vehicular traffic on this avenue, it was necessary to design the system so as to enable drivers to discern other cars and pedestrians by surface detail, or by direct vision, rather than by silhouette. An object anywhere in the street several blocks ahead can readily be seen. There is a minimum of glare, thereby providing maximum visibility.

The lighting consists of 70 Line Material Controlites with 15,000-lumen incandescent lamps, with 8-foot upsweep brackets. Wood poles were used with overhead wiring. Units are mounted 28½ feet along the center line of the pavement. Pavement width is 70 feet and the poles are set against the curb.

These luminaires are designed to direct the maximum amount of light longitudinally along the street with only a small amount directed back to the sidewalks. As viewed with the eye, the entire street surface is evenly illuminated with an intensity of between 1.25 and 1.5 foot candles.

A modern twin-light boulevard-lighting system was installed in the business district of Cedar Rapids some years ago, but this First Avenue installation is our first that fulfills the street-lighting requirements as specified by the American Standard Practice for Street and Highway Lighting as prepared by the Illuminating Engineering Society, assisted by the Institute of Traffic Engineers and the National Safety Council. One hundred poles have been set for the extension of this system along First Avenue beyond 16th Street.

The cooperative effort of the City Council and the Iowa Electric Light and Power Company, both staunch believers in the benefits derived from good street lighting, made this improvement possible—F. K. HAHN, *Mayor, Cedar Rapids, Iowa.*

IT SAYS HERE IN *FINE* PRINT..

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surfa
there is

The att
design of the
bines high ef
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house side to 83 d
street assures maxi
minimum glare.

Joslyn reflector attachm
to fit most porcelain and me

It says here, but NOT in fine
be wise to modernize your old fa
efficient luminaires with the Joslyn
lux reflectors.

- Controlled reflection puts light where it is needed
- High reflector efficiency provides more useful light per watt
- Irritating glare is eliminated
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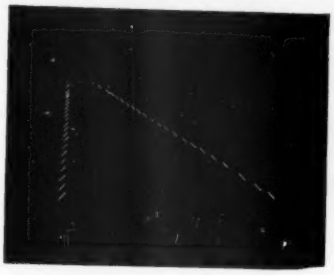
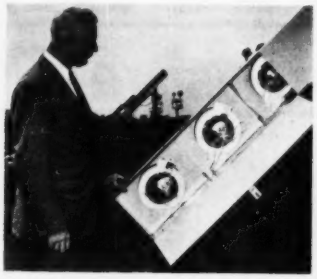
Slope-Line CAA-Developed Approach Lights Adopted

Top: View of lights to a pilot making a perfect approach. Below: View of slope-line approach lights when the pilot is to the left and low.





H. J. Cory Pearson of CAA, who with the late Jerry Sweet developed the slope-line approach light system which gives three-dimensional guidance to the pilot. This is the back of the unit.

A SIMPLE system of airport-approach lights has been approved as standard by an Army-Navy-Civil Committee, and will be installed by the Civil Aeronautics Administration at eight airports. It is the new "slope-line" system developed by the late Jerry Sweet and H. J. Cory Pearson, the latter now a member of the lighting committee of CAA. They conceived the idea of placing rows of lights in such planes that the pilot would see a simple "funnel" of two rows of light leading him to the end of the runway when he was on the right approach path, and other patterns when he was off to right or left, or too high or too low.

Each unit of the system consists of 10 sealed-beam lights set in a box 14 feet long and mounted at a 45 degree angle pointing toward approach path.

Each unit consists of 14 sealed-beam bulbs mounted in a board, or metal box 10 feet long and 1 foot wide. They can be manufactured by anyone, since the CAA releases all such developments to the industry. These units are mounted at an angle of 45 degrees to the ground, the top pointing inward toward the centerline of the approach path. They may be installed on rolling ground and still give the same indication to the pilot. This eliminates the need for structures to raise individual units to a level of the others, which, in the case of many airports, is an important item of expense.

General Electric's New Luminaires

THE new luminaire, as shown above, designed to distribute light from large mercury and incandescent lamps with a minimum of glare, has been announced by General Electric's Lighting and Rectifier Divisions, West Lynn 3, Mass. Designated as Form 109, the new luminare will accommodate the 16,000-lumen and 21,000-lumen mercury lamps in a horizontal position or the 7-inch and 9½-inch light-center filament lamps. The mountings will be available in a wide variety of styles, including the slip-fitted type in 1¼-inch and 2-inch sizes.

The cut to the right shows A. M. Bjontegard, of G. E.'s lighting and

Rectifier Divisions, West Lynn 3, Mass., demonstrating the control with cover removed of the new G-E Form 110 luminaire with built-in photoelectric control. It responds to changes in the prevailing light level and turns the lamp on and off as conditions of visibility demand. The new luminaire, which has a standard optical system and mountings, is especially designed for residential, suburban, and traffic circle lighting.

Fluorescent Lighting For Brooklyn-Battery Tunnel

FLUORESCENT lamps will light the 9,000-foot-long, two-tube, four-lane Brooklyn-Battery Tunnel now being constructed by the Triborough Bridge and Tunnel Authority, New York, N. Y.

Fluorescent lighting was selected because the four continuous lines of fluorescent lamps — two in each tube — will make each roadway a ribbon of light approaching daylight in quality and uniformity. Astronomical clocks will turn on a higher intensity of light in the portal sections during daylight hours to make it safer for motorists driving from bright sunlight into the tunnel at normal traffic speeds.

The supply of power to the lighting system is so interspersed, the General Electric engineers pointed out, that loss of any part of the power supply—including complete loss at one end of the tunnel—will not leave any section of the tunnel in darkness.

Mark Your Highways with COLUMBIA Non-Corrosive PLASTIC SIGNS!

RUST PROOF

Regardless of weather . . . Columbia Plastic Engineered Signs can take it. Blistering Sun . . . Salt Air . . . Rain . . . Snow . . . Sleet or Ice . . . Columbia Markers refuse to rust, fade or deteriorate!

PLASTICS EFFECT SAVINGS

Maintenance costs go down . . . public acceptance goes up with every Columbia Marker installation.

Never any painting problem . . . The color is integrally molded throughout the entire thickness assuring color permanency by utilizing the finest pigments and inhibitors to guard against ultra-violet action.

Maintenance crews are amazed at the long service built into every Columbia sign. Hammering, bending, pounding, stone-throwing and general vandalism virtually bounce off Columbia markers leaving few traces of disfigurement . . . even after years of torture!

PLASTICS OFFER THE MOST FOR YOUR MONEY

There's a definite place for Columbia Plastic Markers in your program . . . every sign meets the latest approved standardizations bringing lower maintenance cost and immediate delivery in any quantity.

AVAILABLE NOW

NO WAITING

Consult your Columbia Dealer or write to us direct. The Columbia Sign Planning Service is available to help you select proper signs, assist you with maintenance problems and point out ways of economy.

Write for

COLUMBIA Booklet

It will give you a wealth of up-to-date Traffic Marker information.

COLUMBIA SIGN & SIGNAL CORP.

10030 LORAIN AVE. **CLEVELAND, OHIO**

McCarran Field Has Latest Runway Lights

DEDICATED December 1948, McCarren Field, the modern new Clark County Class V Airport near Las Vegas, Nev., boasts a high-intensity runway-lighting system developed jointly by General Electric and the American Gas Accumulator Company. The lighting system makes the field one of the nation's safest for night landings under even the poorest conditions of visibility.

The northeast-southwest instrument runway, 150 by 6,500 feet, is lighted by 72 high-intensity runway marker lights and 12 high-intensity green threshold lights, all complete with individual 200-watt isolating transformers.

One hundred elevated medium-intensity lights have been installed along the east-west runway and taxi entrances. Each uses a 40-watt isolating transformer. Other lighting fixtures include a 36-inch rotating beacon, an illuminated wind cone with hinged support, a movable controlable landing-direction indicator, and an airport control panel.

A special static-type regulator of 20-kw capacity, never before used at an airport, was designed by G. E. to operate the runway lights. Other electrical aparatus includes controls, switchgear, and transformers. More than 8,000 feet of fiber duct and approximately seven miles of cable were laid underground to carry power to the lights.

Largest Street Lamps Light Akron, Ohio

THE first installation of the world's largest street lights, 25,000-lumen giants 21 inches in diameter and nearly a yard high, was officially dedicated December 20 in the business district of Akron, Ohio. The 65 lamps, rated as high as 1,500 watts, are located along five blocks of the city's main street. Approximately 180 fixtures will comprise the entire installation, which is to be in operation this year.

Mayor Charles E. Slusser turned on the lights at the dedication ceremonies which were attended by other key city officials and representatives of General Electric and the Ohio Edison Company. The utility officials said that Akron will have "one of the brightest white-way systems in the country. Broad asymmetrical light distribution, with maximum candlepower about 30 degrees from the curb, gives wide light coverage. The ovate shape of the reflector increases the effective utilization of light, in comparison with the round types."

Local Retail Uses

(*Continued from Page* 121)

apartments above. If so, special zoning regulations will have to be devised, for two purposes: to limit the apartments to a much smaller percentage of land coverage, and to make some provision for separate entrances for commercial and residential uses.

OVERLAYS

Special regulations prescribing geographical limits for particular uses, with different boundaries from those of the regular zoning districts, have also come into increasing prominence. Whether or not such regulations are referred to as "districts," in effect they are overlays on the zoning maps. The practice is not one to be recommended for general adoption, for the zoning maps should show as much as possible of the regulations on land use. Yet using occasional overlays need not be any more confusing than permitting exceptions, and they may be useful for delineating the appropriate areas for uses involving heavy traffic—such as bus terminals.[5] The same technique is exemplified in another type of regulation, forbidding certain specified uses within a stated radius of other specified uses. For example, garages and filling stations may be forbidden near schools, playgrounds, or hospitals;[6] or restaurants selling liquor may be forbidden within a stated distance of each other.[7] More important, special height limitations are generally imposed in the vicinity of airports, in order to protect the safety of air transportation and of those in the buildings alike. Such regulations are frequently designed so as to limit buildings in accordance with the C.A.A. regulations prescribing the glide angle for instrument approaches to airports.

5. See New York Zoning Resolution, Section 21-D.
6. See *ibid.*, Section 21-A.

If readers of these Zoning Notes have any experience with or criticism of these two devices that would raise questions of general application, the editor of this department would be glad of word to that effect, as a basis for further discussion.

Is Pipe Rupture by Water Hammer an Explosion?

ACCORDING to a recent legal decision in Wisconsin federal district court, it is. And the L. L. Olds Seed Company of Madison was awarded $25,249.01 damages when water hammer burst a 2-inch water main. The action was based on the standard extended-coverage clause in its $555,000 policy.

Court examination of the damaged pipe led the jury to decide that the damage had been caused by water hammer and furthermore that the hammer damage was explosive in nature, being caused by pressure from within.

The results of the case promise to be of broad concern. Possible action can involve rewriting standard extended-coverage clauses to exclude water-hammer damage. Another possibility is revision of underwriter requirements to include water-hammer-arresting equipment.

Expert testimony on the result and nature of water hammer was given by Professor Lewis Kessler of Northwestern University and Henry Pommerenck, field engineer for the Wade Manufacturing Co., Elgin, Ill., manufacturers of water-hammer-arresting equipment.

7. See Hartford, Conn., Zoning Ordinance, Section 7(5)A.

What Employees Want

(*Continued from Page* 101)

freedom from the fear of a serious illness, freedom from economic insecurity, freedom from the fear of losing their job, and freedom to be transferred to another job should their working conditions be unsatisfactory. They want recognition as an individual for their skills, their suggestions, their attention and energy to their task, for their performance of a job well done. They want sympathetic understanding from their supervisors. Our employees are interested in feeling that their jobs are essential and useful, and that their own small contribution is a necessary part to the successful operation of the municipal government.

Of the top 10 factors in the tabulation, four were economic incentives and six were non-material. If greatly increased response to material incentives is to be achieved, progressive management must seriously consider the desirability of increasing the non-material incentives and other important enthusiasm-producing social measures offered to employees of the organization. The vast possibilities in this field have been either sadly neglected or entirely ignored.

We believe that this is a pioneer project in the field of municipal personnel administration. We believe that it opens up wide possibilities for future explorations in the realm of employer-employee relationships. We believe that it will be a tremendous benefit to us in satisfying our employees, thus making them more loyal and more efficient. We plan to continue the study with the thought of giving our people what they want rather than what we think they might want. The possibilities of such studies seem unlimited.

Enlarged sectional side view showing Prismo Spheres embedded in the Prismo Life Line Binder.

THE PRISMO LIFE LINE . . .
the *GUIDE* of a LIFETIME!

A finger of light points the way to safety! Created by your headlights reflecting on the Prismo Life Line, a gleaming ribbon of light appears.

At once the twisted road is marked for you. Every secret curve exposed. Every hidden danger brilliantly revealed. *It's Prismo guiding you to safety!*

All over America the Prismo Life Line is making roads safer for motoring millions. Test after test shows Prismo first in reflectivity at the widest angle of sight.

All this, plus its longer lasting qualities and its speedy application makes the Prismo Life Line your budget's best buy.

Reflect now . . . *but be sure it's Prismo!*

THE PRISMO SAFETY CORPORATION

HUNTINGDON, PA.

San Francisco Receives Over-all Traffic Plan

One of San Francisco's congestion-relief measures is plenty of parking meters. These around the City Hall are part of an additional installation of meters described on the next page.

By HENRY K. EVANS
Staff Engineer
De Leuw, Cather & Company
San Francisco 2, Calif.

AS THE culmination of a year-long intensive survey and planning project, the City of San Francisco was presented on December 13, 1948, with recommendations for a comprehensive transportation plan to serve as a guide for the next 20 years. Approximately 23 miles of freeway construction is recommended consisting of four radial routes leading to the central business district, and two circumferential routes, one being an inner distributing loop around the business district and the other an outer circumferential route. These freeways are planned generally to be six lanes in width (three in each direction) with certain sections totaling eight lanes.

Proper location of these freeways and required capacities and interchange facilities were based upon data on 919,000 motor-vehicle trips and 972,000 passenger trips. Knowing origins and destinations of each trip, it was possible to estimate how many trips would take place daily via proposed freeways and transit lines. Economic justification for the proposed $150,000,000 freeways project is based on the time and operating expense savings to motorists who would use the new system. These direct savings are estimated at $11,000,000 per year, which, capitalized at 3% interest over a period of 30 years, would justify a capital expenditure of over $216,000,000, which is well in excess of the proposed total cost.

Approximately 10 miles of rapid-transit subways are recommended, to cost $78,000,000. A major portion of the heavy transit volumes that now fight their way up and down Market Street will be taken swiftly and conveniently underground. Due to the peculiar street layout in San Francisco, practically every intersection on Market Street is a five-point junction, with no parallel streets lying north of Market.

The proposed Post Street subway is designed to accommodate rubber-tired buses only. It would lead from the point where the express buses leave the proposed Central Freeway, to a bus terminal.

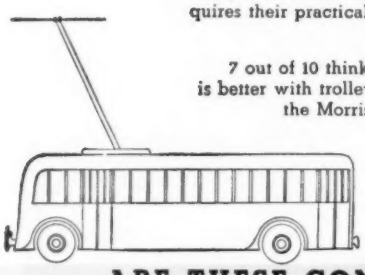
Recommended modernization involves substitution of trolley buses for many existing street-car lines and elimination of duplicating service. An interesting highlight of the findings is the comparison of average operating ex-

Philadelphia knows how to enlist public support, and how to **keep it!**

7 out of 10 people **expressing an opinion** in a city-wide survey* prefer electric transit vehicles—PCC cars and trolley coaches.

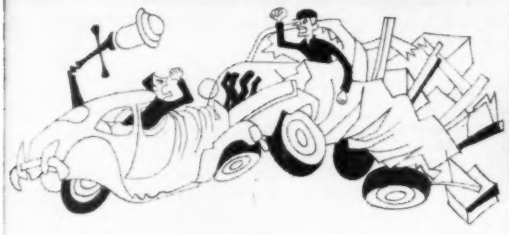
9 out of 10 **like** the new trolley coaches on the Morris-Tasker line† . . . where heavy traffic requires their practical application.

7 out of 10 think the **service** is better with trolley coaches on the Morris-Tasker line.



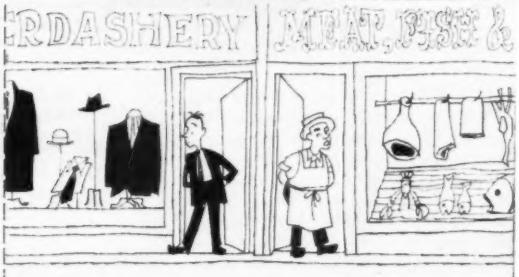
*1945, Opinion Research Corp. †1947, National Analysts, Inc.

ARE THESE CONDITIONS TRUE IN **YOUR** CITY?



"This traffic problem has to be solved!"

"And without spending millions for freeways and superhighways."



"All those cars and no customers! This neighborhood is blighted!"

PERHAPS YOUR CITY IS ONE OF THE HUNDREDS SUFFERING FROM TRAFFIC CONGESTION AND BLIGHT CONDITIONS. ELECTRICS ATTRACT MORE RIDERS AND COST LEAST TO OPERATE. PLEASE WRITE US. WE ARE ANXIOUS TO HELP. Apparatus Department, General Electric Company, Schenectady 5, N. Y.

GENERAL ELECTRIC 181-4

penses, which showed the following for the six-month period from July through December 1947.

Street cars	$7.11	per	car hour
Cable cars	7.65	"	"
Motor bus	4.50	"	"
Trolley bus	3.86	"	"

Parking Program

Four- and five-level parking garages are recommended for construction in the central business district. With an initial cost of $8,000,000 and a total outlay of $20,000,000 by 1970, they are located and designed to meet the following requirements:

- Enough capacity so that no motorist will have to walk farther than 1,000 feet to his destination.
- Location at the edge of the concentrated business area, and easily reached via the proposed freeway system and recommended one-way-street system.
- Garages to be paid for out of their own parking revenues.

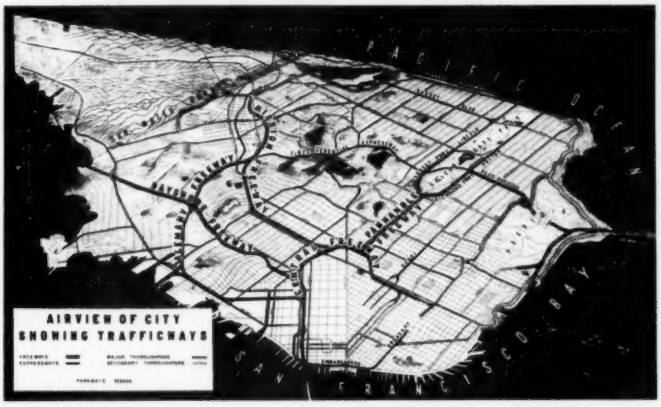
Improved Traffic Control

A one-way street system is recommended for the entire metropolitan traffic district. By making one street one-way leading away from the many five-point intersections along Market Street, such an intersection becomes a normal four-way junction, thus simplifying traffic control. The one-way program increases street capacity from 50 to 100%.

A new traffic-signal timing plan is detailed for Market Street, to eliminate the delays now experienced by street cars and buses while waiting for the red light to change to green. One recommendation already in effect lengthens the distance between successive transit stops, increasing the speeds of street cars by 12 to 42% and buses by 5 to 29%.

The report points out that whereas intersections comprise only about 10% of the street area in San Francisco, over half the collisions occur there. During 1947, accident victims paid out $2,750,000 in direct accident expenses.

The report, recommending over $200,000,000 worth of improvements, is the product of the joint effort of De Leuw, Cather and Company of Chicago, and Ladislas Segoe and Associates of Cincinnati. The two firms were engaged by the San Francisco City Planning Commission in October 1947 to work with the four city departments concerned with one or another phase of transportation in the preparation of the plan. Financing was accomplished through appropriation of $200,000 by the city to cover all costs of the project. The results are incorporated into a 200-page report to the San Francisco City Planning Commission and released by that body.



Recommended 20-year program of freeways and major improved routes. Note proposed additional southern bay crossing. Bayshore Freeway is under construction.

San Francisco Will Have

12,000 Parking Meters

When Program Is Completed

By T. A. BROOKS
Chief Administrative Officer
San Francisco, Calif.

FOR many years the mere mention of parking meters had aroused violent opposition in San Francisco from automobile owners and merchants. On September 1, 1947, a trial installation of 560 Park-O-Meters was made along Polk Street for 12 blocks, and on seven side streets both ways from Polk Street for one block. The Polk Street business district is outside the central business district, but close to it, and serves a large apartment house and a residential area. After installation of these meters the opposition died down, and merchant groups in various sections of the city petitioned for meter installations to eliminate automobile congestion.

There have been seven installations since the one along Polk Street, and the total number of meters now in operation is about 1,860. Those installations are in neighborhood business districts outside of the downtown area, except one which covers the Civic Center. Others are being made at the present time under contract recently entered into for an additional 5,000 Park-O-Meters. In all, the city thus far has contracted for 6,850 meters.

The installation of meters is authorized by the Police Commission on the basis of engineering studies made by the Traffic Engineering Bureau in the Department of Public Works. The Tax Collector's personnel winds them, collects the money from the meters, and accounts for collections. The Department of Electricity, which maintains our traffic signals, is responsible for maintenance of parking meters. The Department of Public Works, the Tax Collector's Office, the Department of Electricity, and the City Purchaser are all under the jurisdiction and supervision of the Chief Administrative Officer, whose office is the coordinating agency for parking meters.

The city has from the start held to the viewpoint that meters were being installed, not for revenue, but for the sake of parking regulations. Its viewpoint has been justified by results, in that each business district where meters have been installed the parking congestion has been greatly alleviated. In one small crowded business area there is still congestion because the Police Department has not yet been in a position to enforce the one-hour parking ruling. The congestion is expected to disappear when that ruling is enforced.

In all installations thus far, meters have been automatic, with one coin slot for nickels and pennies. A nickel entitles the parker to one hour and a penny to twelve minutes. The one-hour parking limit is enforced by the old-fashioned method of a police officer marking the tire with chalk. Long-time parking has been eliminated wherever meters have been installed, and merchants are very happy about the availability of parking space at the curb for their customers.

It is anticipated that when San Francisco's program is completed the city

More than 450 Cities HAVE INVESTED IN PROGRESS

City officials all over the nation are coming to realize that if their towns are to keep their place as trading points of importance they must DO SOMETHING ABOUT PARKING. The farmer who used to drive a team had to go to the nearest town whether or not it offered conveniences. In his automobile he may now seek convenience at any distance . . . *and he does.*

That's why *more* cities bought *more* Park-O-Meters in 1948 than ever before!

"Progress" Means

PARK-O-METER

Convertible Model G

Look at this list of exclusive features combined in the CONVERTIBLE Model G PARK-O-METER. Then add to these the fact that Model G is convertible, INSTANTLY AND ON THE SPOT, from standard wipe-off reset to cumulative time . . . from 1-hour to short-time or 2-hour time settings . . . from single coin to multiple coin operation . . . and from sealed coin-box to automatic coin dumping collection. This means that your Park-O-Meter installation will never grow obsolete . . . it can be changed to meet changing needs without any new parts and without conversion expense. Because only Park-O-Meter offers all these advantages, cities all over the nation are specifying Park-O-Meter, Model G.

Whether or not your city is using metered parking, investigate the automatic, convertible Model G PARK-O-METER.

- Die-cast case
- Red arrow coin-slot
- Gasket seal all around
- 50-yard visibility
- Theft-proof coin drop
- Slug-detector windows
- Hinged coin door
- Work-table mechanism door
- Automatic coin collection
- Snow-proof coin-slot closure
- Completely automatic operation
- Universal coin-time settings
- Demountable unit assembly
- Snap-off precision-built timer
- Visual trouble signal plus coin-slot lock
- Fix-fast unit repair
- Tamper-proof cash register

MODERNIZE YOUR PARKING

INSTALL PARK-O-METER

ASK US FOR POSITIVE PROOF

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will have approximately 12,000 meters, which on the basis of past experience should return to the city a net revenue of more than a half-million dollars a year after paying for all costs of installation, maintenance, and operation. Gross revenue of the meters thus far installed is running somewhat better than $6.50 per meter per month, an average that should be maintained if the meters are carefully placed. At this early stage it is difficult to calculate their exact operating and maintenance cost. The following items entered into our calculation:

Collections — Personnel: 1 man per 1,500 meters, 8 men at $310 per month ..... (Collection made every four working days)	$29,760
Coin Handling—Personnel: 1 teller for 3,000 meters, 4 tellers at $310 per month	14,880
Supervision of Collections: 1 Senior Inspector at $390 per month	4,680
Maintenance — Personnel: 1 machinist outside per 600 meters, 20 machinists at $316 per month	75,840
Plus 3 instrument makers inside at $361	12,996
Painting—15 cents per year per meter	1,800
Motor Vehicles (4) (collection and maintenance) at 6 cents per mile, 500 miles per day...	7,560
Meter Depreciation (10 years at $6 per year each)	72,000
Parts (based on completely replacing two of each 100 meters per year)	14,400
Other Equipment—depreciation: Scales .....$ 60	
Coin Counter 2,600	
Depreciation	222
Engineering and striping at 75 cents per meter per year	9,000
Total	$243,138
Plus 15% for overhead and other contingencies	36,470
Total expenses per year	$279,608

The total expense amounts to $1.94 per meter per month. In our estimate we made this a flat 2, leaving $4.50 per month net revenue as our estimate.

The Police Department has recently approved the installation of meters on a large number of downtown streets (except Market Street). We have yet, however, had no experience with meters in the central business area.

Pedestrians Observe These Signals

By F. T. FOWLER
Traffic Engineer
Portland, Ore.

THE problem of control of vehicular and pedestrian traffic on city streets by the use of mechanically operated signals has been under study by traffic engineers for years. The Institute of Traffic Engineers has adopted as a standard for such traffic-signal installations the four-post type of installation on the far right-hand side of the intersection. Three-light heads are set at a 90-degree angle to provide two signal lights for vehicle operators in each direction as well as lights visible to pedestrians on either side of the street.

The center-suspended type of signal has not been approved by traffic engineers in general for many reasons, one of which is the fact that it is generally too close to the stop line to be readily visible to the vehicle operator. Also, it is in such a position that the pedestrian is not able to see it readily, and consequently continues to walk after the signal has changed.

In any event, the attempt to control pedestrians with the red, amber and green signals has never been satisfactory. An amber period of three seconds followed by two seconds' overlap of red will give pedestrians only five seconds of clearance time at the most. This is not sufficient time for them to cross even a narrow roadway. Therefore, the pedestrian is left in the center of the roadway, and unless the vehicle operator gives him the right-of-way, he is placed in a hazardous position. With this idea in mind, the use of walk-wait signals has been advocated for some time.

Prior to the war, the City of Portland, in cooperation with the Oregon State Highway Department, made a traffic-signal installation in the central west-side business area of Portland on S.W. Fourth Avenue. This installation had a standard four-post type of vehicular signal plus walk-wait signals placed on the same post at an elevation of 7 feet above the sidewalk. These signals were timed in such a manner that the "wait" signal would come on before the amber light, in time to allow clearance for pedestrians. Experience has proved that this type of installation will not work, since the pedestrian will continue to walk by the green light as long as it is visible to him. A concerted effort by the police bureau to enforce regulations failed because pedestrians had been schooled to observe the green light, and not enough officers could be allocated to this area to compel observance of the walk-wait signals.

This plan of signal installation is being used in Portland and also by the Oregon State Highway Department in other cities in the State of Oregon. Using overhead wiring almost entirely has facilitated our installations during this period of shortages of certain materials. We are using wood poles, but when steel poles are more readily available we will probably use them. It is my belief that the span-wire installation of vehicular signals is much better than the diagonal mast-arm type, such as has been used in Detroit and other cities. This mast-arm type of installation places the signal at a different location for the two streets and I do not believe this is best from the standpoint of uniformity of location.

Following this type of installation, Mr. John Beakey, who was then Traffic Engineer for the Oregon State Highway Department, and myself, devised a system of traffic-signal installation which we felt would be a distinct improvement over the type installed on S.W. Fourth Avenue. This installation called for vehicle signals to be installed on the far side of the intersection, suspended over the roadway either on span wire or on a mast-arm installation. Walk-wait signals were then installed on the corners to provide a signal unit directly across the street in front of the pedestrian, at or near the level of his eyes. Mr. Beakey proceeded with the installation of this type of signal at several intersections in the city of Klamath Falls, Ore. This system was placed in operation just before the start of the war and has been giving excellent service since. It was adopted by Mr. Beakey and myself for all signals in Portland, and new installations were made under this plan on N.E. Union Avenue, on N. and N.E. Lombard Street and other major streets. The one fault is that the pedestrian can readily see the green light and continues to walk, in many cases, as long as the green light is visible.

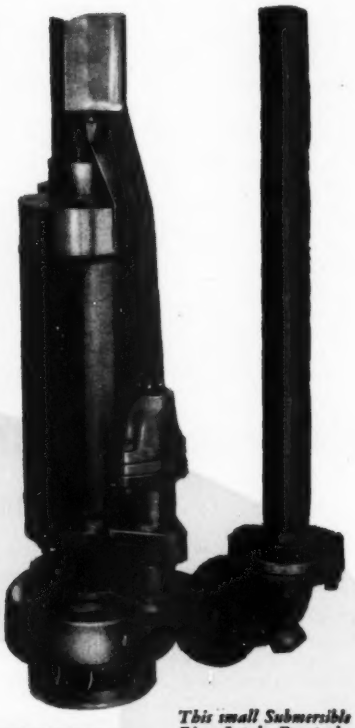
Hence, I continued to experiment with different types of louvres which could be placed in the visors of the *vehicular* signals in order to cut off the visibility to the pedestrian standing on the sidewalk corner.

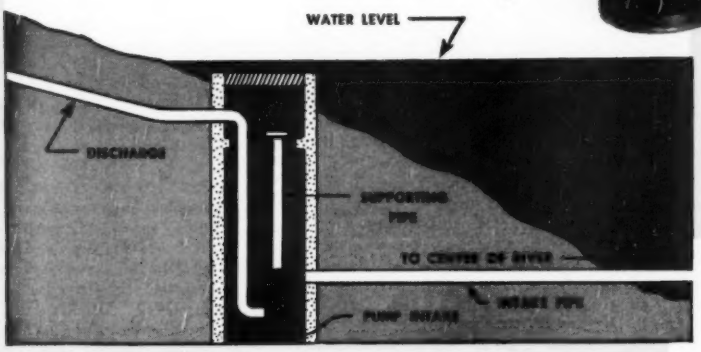
These experiments proved that it was possible to corrugate the thin sheet of aluminum and still be able to shape it in the proper form. These corrugations broke up the light rays in such a manner that except in extreme darkness and on rainy or foggy days, visibility to the pedestrian was reduced to a point where it was not a factor in pedestrian con-

Pumping from lake or river?
. . . with icing in winter?
and high water in the spring?

get *Under* the trouble with a **BJ**

SUBMERSIBLE RIVER INTAKE PUMP





This small Submersible River Intake Pump delivers river water at 100 gpm against a 55 ft. head. Consistent water delivery in spite of 40° below zero North Dakota Winter temperatures and Spring high water 45 feet above the pump intake.

CAPACITIES: to 5000 gpm
MOTOR SIZES: 7½ to 350 hp
INSTALLATION: Vertical, Horizontal, or on an incline

Down at the bottom of the river or lake it doesn't matter about ice or high water. That's why the Submersible is the logical solution to this kind of pumping problem. It operates regardless of surface conditions.

Sealed oil-filled submerged motor is close-coupled direct to pump (pump can be any one of several different types).

Starting panel (equipped for manual or automatic starting) can be located at any convenient point above flood stage. Discharge pipe should be buried enough to eliminate freezing.

Many other advantages. Easy to install. Simplified intake structure. No adjustments. No pump house. Operates for months without attention. Safe against vandalism.

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trol. These louvres were designed as a circular tube approximately 8 inches in diameter and 5 inches deep, with vertical fins 4 inches deep spaced one inch apart. These fins were spot-welded to the tube, and the whole unit painted a dull black. They were so designed that they would slip into the standard traffic signal visor, either the cutaway type or 8-inch tunnel visor. We have now completed the installation of 100 intersections in the central business area and other section of the city with the suspended-type vehicle signal with louvres and pedestrian walk-wait signals around the intersection.

Best Yet

The problem in regard to the walk-wait signal lenses was solved by the use of the standard Institute of Traffic Engineers' "walk" lens, which I believe gives the best visibility possible for this size of unit, and a "wait" lens which was made for us by the Kopp Glass Inc., of Swissvale, Pa., and furnished through any of the major signal-manufacturing companies. This lens is made on the standard Institute of Traffic Engineers' "wait" lens mold but of a special dark amber glass.

The lens, instead of being black for the entire surface except the letters, is left open at top and bottom with a black band across the center surrounding the letters. This gives us a distinct color difference between the "walk" lens and the "wait" lens and also provides a difference in form so that people can readily determine which light is on, whether they are able to read the wording on it or not. The amber color does not provide a signal which will interfere with the vehicular traffic, and in general the placing of these signals is such that they are not readily visible to the vehicle operator. This type of "wait" lens has been adopted by Detroit and other cities.

We have found that there is at least 50% better observance of the signals by the pedestrian following this type of installation. The tendency to crowd into the street while waiting for the signal to change has been reduced, with a corresponding improvement in the vehicular traffic movement.

We are planning one complete grid-system of one-way streets in our central business area and this system of signals will fit into this plan much better than a standard installation.

Consider the Fire Department In Making Traffic Plans

By GEORGE W. BOOTH
Chief Engineers
National Board of Fire Underwriters
New York 7, N. Y.

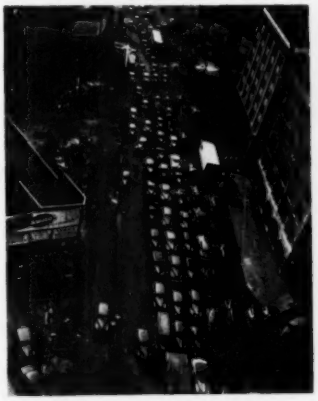
OBSERVATION of traffic congestion in the course of regular surveys of cities by the National Board of Fire Underwriters' engineers has disclosed that little or no consideration has been given by municipal authorities to its relation to an important city function—that of fighting fires.

No municipal traffic plan or ordinance is complete unless it gives consideration to local fire-department response. Local fire-department response is usually based on a running card. The running card is generally prepared by the Fire Chief with due regard for local traffic conditions. Hence, any new comprehensive traffic or master plan and ordinance—especially a long-range one—should take into account the need for unimpeded response for fire apparatus, and the location of fire stations both existing and proposed.

Most city officials declare parking the greatest cause of traffic congestion. Furthermore the accompanying evil of double parking not only chokes the flow of traffic but can easily cause serious accidents. This situation was recognized long ago by engineers of the fire-insurance industry and local fire chiefs who come face to face with this problem daily, with the result that a brochure incorporating many practical recommendations and traffic plans for adoption by cities meeting this problem, was promulgated in 1927.

With this parking problem, not only is the fire department handicapped in responding, but also the parked vehicle is a decided obstacle on the fire ground, as it interferes with ladder raising, the locating of apparatus in front of the building on fire, laying hose lines, access to fire hydrants, etc. Therefore, particular consideration should be given to the prohibition of parking vehicles near and about hotels, large apartments, and places of public assembly.

In some cities where for many reasons it is impracticable to prohibit parking on all streets in the congested sections —which would be ideal—the authorities have prohibited parking on certain streets most used by fire apparatus when responding to alarms.



Arrangements should be made for fire apparatus to get through modern traffic—the way it looks on Canal St., New York.

Important street intersections in the vicinity of fire stations should be provided with a warning signal to be operated by the company when it is about to leave quarters; this will be of greatest value when it serves to notify a traffic officer stationed at or near the intersection.

Suggested Improvements

Any traffic- and parking-control program requires the wholehearted cooperation of the industrial and commercial interests and their employees with the city officials. With this in mind it is suggested that:

1. An employee educational program should be drawn up to reduce alarms and fires which occur from occupational carelessness and enlist employee cooperation in aiding in the relieving of traffic congestion.

2. Where employees park on public streets, especially narrow ones, near the office, store or plant, consideration should be given to the provision of employee parking-lot facilities.

3. "Pit" or "curb box" sprinkler-control valves and fire-department connections, either in the street or in the mill yard, should be kept accessible.

4. Where hydrants are located at the street, in the mill yard, or both, "fire zones" should be clearly marked.

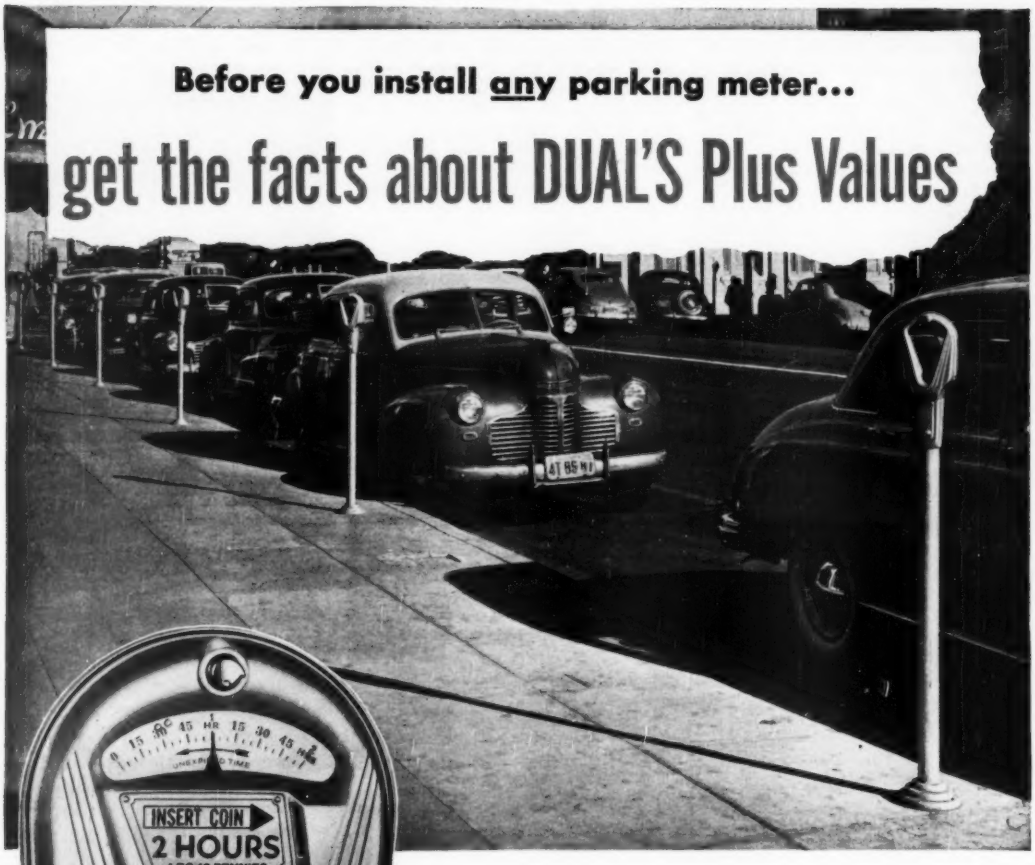
5. Receiving and shipping facilities should not obstruct free movement of fire apparatus through all parts of the yard and along streets.

6. Cooperative projects for staggering shifts with other plants and offices to avoid mass movement into traffic arteries at one time in the morning and afternoon will accomplish much in the relieving of traffic congestion.

7. That ordinances prohibiting the chasing of responding fire apparatus by so-called "fire fans" be adopted and enforced.

Before you install <u>any</u> parking meter...

get the facts about DUAL'S Plus Values



YOUR city's investment in parking meters is important to your community in many ways. That's why it's wise to find out—before you install *any* meter—the plus values you gain with Dual Automatic Parking Meters.

For example, choice-of-coin Duals provide for accumulative time and operate automatically. The mechanism is a completely packaged unit, engineered to operate with a minimum of maintenance. Duals are *weather-proof* and *tamper-proof*—further protection against non-productive "time out".

They're precision-built—like fine timepieces. And when they require occasional cleaning and servicing—as all fine timepieces do—they get factory specialist attention. Dual sends field servicemen on periodic inspections—factory-trains *your* personnel.

Rugged, long-lasting Duals are a good investment in traffic control for *your* city. Get all the facts. Write today for free bulletin. Ask our engineers for helpful survey service.

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...YOUR BEST ANSWER TO EVERY PARKING PROBLEM

Recent City Manager Appointments

The following portraits are of city managers whose appointments have been announced in recent issues of *The America City*.

Ernest P. Davenport
Barton, Vt.

Wayne N. Baxter
Larned, Kans.

Louise Timoney
Vassalboro, Me.

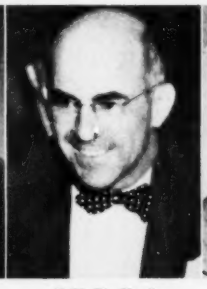
H. A. Guss
Northampton, Pa.

Sherwood Reeder
Richmond, Va.

Julian T. Van Hook
Woodward, Okla.

Edwin S. Howell
El Cerrito, Calif.

B. R. Fuller
So. Norfolk, Va.



Bill N. Taylor
Tyler, Texas

Harold N. Corbin
Porterville, Calif.

ARTHUR J. ABLES succeeded WINSTON SMITH at Madill, Okla.

J. D. BAUGHMAN, manager at Glendale, Ariz., from May 1947 to February 1949, became the first manager of Albany, Ore., February 15.

O. BRULOTTE became first manager of Lac Megantic, Quebec.

H. W. COLBORN, Borough Clerk, was appointed at Scottdale, Pa.

EUGENE T. CREAGH, City Comptroller, succeeded Orville C. Butler as manager of Niagara Falls, N. Y.

PERRY DAVIS became first manager of Clifton, Tenn.

MAX F. DENNIS, Assessor, was appointed acting manager at Elmira, N. Y., until 1949 fall election.

PERCY W. DROST is acting manager at Bend, Ore.

A. AUSTIN FAHEY, resident engineer at the University of Maine, succeeded DORIS WRIGHT at Eastport, Maine.

W. E. FAULKNER is acting manager at Hazard, Ky.

GEORGE HEIN, manager of Lehighton, Pa., from August 1945 to February 1949, received the appointment at State College, Pa.

E. T. HYMAN is manager of Elizabeth City, N. C.

WAYNE LAMBERT, city engineer, succeeded CLYDE B. KING (retired) at Arkansas City, Kans.

E. B. LIGON became the first manager of Fort Stockton, Texas.

MILLAR S. JOHNSON, manager, 1935-41, is back again at Saranac Lake, N. Y.

CLIFFORD MCKIBBIN, JR., manager of Winter Park, Fla., succeeded H. N. SAYER at Sanford, Fla.

ROBERT MARTIN succeeded STEPHEN MEEM at Bedford, Va.

PHIL H. MINNER, manager at Liberal, Kans., since January 1948, was appointed at Antioch, Calif.

HENRY MOORE has replaced G. D. HUGHES at Heavener, Okla.

JAMES E. MORRISON became the first manager of Ellensburg, Wash.

M. O. MUNGER, Police Chief, is first city manager of Perrine, Fla.

R. P. NORRIS has succeeded F. H. SMITH as manager of Tifton, Ga.

ALEX ROBERTSON was appointed acting manager until after the April election at Manistique, Mich.

J. E. RUSSELL, former City Engineer of State College, Pa., is the first manager at New Holland, Pa.

ERNEST V. SNELL succeeded DON W. COLLINS at Colby, Kans.

DAN SWEANEY is the manager at Weirton, W. Va.

MARTIN TAYLOR succeeded M. E. GOURLEY at Villasca, Iowa.

E. B. TUCKER, consulting engineer, was appointed manager of Glendale, Ariz., to succeed J. D. BAUGHMAN.

E. W. WATTS has replaced BEN FREUDENSTEIN at Brownsville, Texas.

CLARENCE E. RIDLEY, *Director*
International City Managers' Association
Chicago 37, Ill.

ANNUAL INDEX
TO CONTENTS—1948

Published separately as an 8-page leaflet, it is available without charge to any subscriber for *The American City* on request.

TRAXCAVATORS

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THE YEAR AROUND

In village, town or city — TRAXCAVATORS are tax savers by their time proven versatility and ability to get the job done fast — at low cost. Used for road building, street maintenance, sanitary fill garbage disposal, or removing snow from city streets. TRAXCAVATORS are constantly on the go doing the many jobs necessary for the proper maintenance of municipal health, streets and highways.

ONLY TRAXCAVATORS give you a size for every job and purpose. Bucket capacities range from ½ to 2½ cubic yards. Look into the many time-saving, money-saving advantages of TRAXCAVATORS now — make your tax dollar last longer and do more. Call your nearest TRACKSON-"Caterpillar" dealer or write direct to TRACKSON COMPANY, Dept. AC349, Milwaukee 1, Wisconsin.

Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

March 11-12—Richmond, Va.
American Concrete Pipe Association Annual Convention (Hotel John Marshall). Mng. Dir., H. F. Peckworth, 228 N. LaSalle Street, Chicago, Ill.

March 11-13—Washington, D. C
American Society for Public Administration. Annual Convention (Hotel Statler). Sec.-Treas., Laverne Burchfield, 1313 E. 60th St., Chicago, Ill.

March 14-15—Ann Arbor, Mich.
Inservice Training Course in Sewage and Industrial Waste Disposal. (University of Michigan, School of Public Health.) H. E. Miller, School of Public Health, University of Michigan, Ann Arbor, Mich.

March 15-18—Houston, Texas
The American Institute of Architects. Annual Convention (Hotel Rice). Exec. Dir., Edward C. Kemper, 1741 New York Ave, NW., Washington 6, D. C.

March 21-23—Washington, D. C.
United States Conference of Mayors. Annual Conference. Exec. Dir., Paul V. Betters, 730 Jackson Place, NW., Washington 6, D. C.

March 22-25—Atlantic City, N. J.
New Jersey Mosquito Extermination Association. Annual Meeting (Hotel Chalfonte-Haddon Hall). Sec., Thomas D. Mulhearn, New Brunswick, N. J.

March 23-25—Trenton, N. J.
New Jersey Sewage Works Association. Annual Meeting (Hotel Stacy-Trent). Sec.-Treas., Michael S. Kachorsky, 345 No. 8th Ave., Manville, N. J.

March 27-30—Oklahoma City, Okla.
American Planning and Civic Association. Annual Conference (Hotel Skirvin). Exec. Sec., Miss Harlean James, 901 Union Trust Bldg., Washington, D. C.

Mar. 31-April 1—Natural Bridge, Va.
Virginia Industrial Wastes and Sewage Works Association. Annual Meeting (Hotel Natural Bridge). Sec.-Treas., A. H. Paesler, 815 E. Franklin St., Richmond 19, Va.

***April 1-3—Prescott, Ariz.**
American Water Works Association—Arizona Section. Annual Convention (Hotel Hassayampa). Sec., Mrs. Helen Rotthaus, Sanitary Eng. Div., Arizona State Dept. of Health, Phoenix, Ariz.

April 4-6—Washington, D. C.
American Society of Landscape Architects. Annual Meeting (Hotel Shoreham). Corresponding Sec., Bradford Williams, 9 Park St., Boston 8, Mass.

April 7—Great Falls, Mont.
Montana Sewage Works Association. Annual Meeting (Civic Center). Sec., H. B. Foote, State Board of Health, Helena, Mont.

April 8-9—Great Falls, Mont.
American Water Works Association—Montana Section. Annual Meeting (Civic Center). Sec., C. W. Brinck, State Board of Health, Helena, Mont.

April 11-13—Little Rock, Ark.
Arkansas Water and Sewage Conference. Annual Conference (Hotel Marion). Sec., Harrison Hale, 118 Chemistry Bldg., Fayetteville, Ark.

April 20-22—Indianapolis, Ind.
American Water Works Association—Indiana Section. Annual Meeting (Hotel Lincoln). Sec.-Treas., C. H. Bechert, Room 217, Underwriters' Bldg., Indianapolis, Ind.

April 21-22—Hutchinson, Kans.
American Water Works Association—Kansas Section, and Federation of Sewage Works Associations, Kansas Section. Annual Meeting (Hotel Bisonte). Sec., Sewage Works Assn., Dwight F. Metzler, Room 2, Marvis Hall, Lawrence, Kans.

***April 21-22—Lincoln, Nebr.**
American Water Works Association—Nebraska Section. Annual Convention (Hotel Cornhusker). Sec., John W. Cramer, Fulton & Cramer, 922 Trust Bldg., Lincoln 8, Nebr.

April 25-27—Quebec, Canada
American Water Works Association—Canadian Section. Annual Convention (Chateau Frontenac). Sec.-Treas., A. E. Berry, Parliament Bldgs., Toronto, Ontario, Canada.

***April 25-27—Oklahoma City, Okla.**
American Association of Airport Executives. Annual Meeting (Hotel Biltmore). Sec.-Treas., Melvin H. Nuss, Box 356, Reading, Pa.

***April 28-29—Elmira, N. Y.**
American Water Works Association—New York Section. Spring Meeting (Hotel Mark Twain). Sec., R. K. Blanchard, Neptune Meter Co., 50 W. 50th St., New York, N. Y.

***April 28-29—Hagerstown, Md.**
Maryland-Delaware Water and Sewerage Association. Annual Meeting (Hotel Alexander). Sec.-Treas., Miss E. Virginia Gipe, 2411 N. Charles St., Baltimore 18, Md.

***April 29—Bakersfield, Calif.**
American Water Works Association—California Section Regional Spring Meeting. Sec., H. C. Medbery, Engr. of Water Purification, San Francisco Water Dept., Millbrae, Calif.

May 2-5—Washington, D. C.
Chamber of Commerce of the United States. Annual Meeting (Chamber Building). Exec. Vice-Pres., Ralph Bradford, 1615 H St. NW., Washington, D. C.

May 9-11—Detroit, Mich.
Association of State Planning and Development Agencies. Annual Meeting (Hotel Book Cadillac). Exec. Dir., Walter H. Blucher, 1313 E. 60th St., Chicago 37, Ill.

May 10-12—Los Angeles, Calif.
American Public Power Association. Annual Convention (Hotel Ambassador). Gen. Mgr., Carlton L. Nau, 1757 K St., NW., Washington 6, D. C.

May 12-14—Bellingham, Wash.
American Water Works Association—Pacific Northwest Section. Annual Meeting (Hotel Bellingham). Exec. Sec., Fred Merryfield, Prof. San. Eng., Oregon State College, Corvallis, Ore.

May 16-19—San Francisco, Calif.
National Fire Protection Association. Annual Meeting (Hotel Fairmont). Gen. Mgr., Percy Bugbee, 60 Batterymarch St., Boston, Mass.

May 17-18—Washington, D. C.
National Public Housing Conference. Annual Meeting (Hotel Statler). Exec. Vice-Pres., Lee F. Johnson, 1015 Fifteenth St., NW., Washington 5, D. C.

May 23-26—Detroit, Mich.
Municipal Finance Officers Association of the United States and Canada. Annual Meeting (Hotel Statler). Exec. Dir., Miner B. Phillipps, 1313 E. 60th St., Chicago 37, Ill.

May 25-27—Chicago, Ill.
National Institute of City and Town Clerks. Annual Conference (Hotel Sherman). Exec. Dir., Philip P. Costello, City Hall, Perth Amboy, N. J.

May 30-June 3—Chicago, Ill.
American Water Works Association—National Convention. Annual Convention (Hotel Stevens). Exec. Sec., Harry E. Jordan, 500 Fifth Ave., New York, N. Y.

June 1-3—Washington, D. C.
President's Highway Safety Conference (Departmental Auditorium, Federal Works Bldg.). Gen. Chr., Major Gen. Philip B. Fleming, Federal Works Administrator, Washington 25, D. C.

***June 6-10—Quebec, Canada**
Canadian Federation of Mayors and Municipalities. Annual Meeting (Chateau Frontenac). Exec. Dir., George S. Mooney, Mount Royal Hotel, Montreal, Quebec, Canada.

***June 10—Paris, France**
Association des Cites-Jardins de France and Association Internationale des Cites-Lineaires Jardins. Annual Meeting. Dir., Georges Benoit-Levy, 11 rue Malebranche, Paris 5, France.

June 12-17—Cleveland, Ohio
Annual Conference of Social Work. Annual Meeting (Cleveland Auditorium). Exec. Sec., Joe R. Hoffer, 82 North High St., Columbus, Ohio.

***June 13-17—Edinburgh, Scotland.**
The Institute of Public Cleansing. Annual Conference. Sec., K. Wyndham Brown, 8, Orange St., London, W.C. 2, England

***June 22-25—Lake Tahoe, Calif.**
National Association of Tax Administrators. Annual Convention (Tahoe Tavern). Exec. Sec., Charles F. Conlon, 1313 E. 60th St., Chicago 37, Ill.

June 23—Wanaque, N. J.
American Water Works Association—New Jersey Section. Outing and Inspection. Exec. Sec., C. B. Tygert, P. O. Box 178, Newark 1, N. J.

July 17-20—Oakland, Calif.
National Association of County Officials. Annual Convention. Exec. Dir., Keith L. Seegmiller, 1616 I St. NW., Washington 6, D. C.

***Sept. 8-9—Minneapolis, Minn.**
American Water Works Association—Minnesota Section. Annual Conference (Hotel Nicollet). Sec.-Treas., R. M. Finch, 518 Metropolitan Life Bldg., Minneapolis 1, Minn.

Sept. 13-16—Dixville Notch, N. H.
New England Water Works Association. Annual Meeting (Hotel Balsams.) Sec., Joseph C. Knox, 204 Tremont Bldg., Boston 8, Mass.

Sept. 19-22—Boston, Mass.
National Tax Association. Annual Conference (Hotel Statler). Sec., Ronald B. Welch, P. O. Box 1799, Sacramento 8, Calif.

***Sept. 20-22—Des Moines, Iowa**
Iowa Sewage Works Association. Annual Meeting (Hotel Kirkwood). Sec.-Treas., Leo Holtkamp, P. O. Box 310, Webster City, Iowa.

***Nov. 15—New York, N. Y.**
Regional Plan Association, Inc. Fourth Regional Plan Community Conference (Hotel Roosevelt). Exec. Vice-Pres., C. McKim Norton, 205 E. 42nd St., New York, N. Y.

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Municipal and Civic Publications

Airport Zoning

AIRPORT ZONING—*By J. Nelson Young. Aeronautics Bulletin No. 4, published by Institute of Aeronautics, University of Illinois, Urbana, Ill. Dec.* 1948. *76 pp. Available without charge.*

An excellent monograph on problems involved in airport zoning and in the drafting of airport zoning ordinances and legislation. The appendices include a model state airport zoning act, current enabling statutes for airport zoning, model airport zoning ordinances, sections from several ordinances on zones and height limitations, and even a request to the county board to adopt airport zoning regulations for use in cases where a municipal airport is outside the city limits.

An extensive compilation of references on the subject adds to the value of the monograph and should interest everyone concerned with airport development problems.

Expanding Parking Surveys

LEGAL, ADMINISTRATIVE AND FINANCIAL ASPECTS OF URBAN PARKING SURVEYS—*By David R. Levin, Special Administrative Studies Unit, Div. of Financial and Administrative Research, Public Roads Administration, Washington, D. C. Dec.* 1948. *Mimeo. 38 pp.*

The paper proposes that urban parking surveys be expanded to include additional aspects of the parking problem, particularly those dealing with legal, administrative and financial questions. It points out that little action will be taken to alleviate the situation until these matters are properly dealt with. The paper describes some of the basic considerations involved in legal, administrative, and financial recommendations, and mentions the cities of Albert Lea, Minn.; Toledo, Ohio; Seattle and Spokane, Wash., as among those which have included in varying degrees some of the paper's suggestions in their recent parking surveys.

Metropolitan Districts

THE GROWTH OF METROPOLITAN DISTRICTS IN THE UNITED STATES: 1900-1940—*By Dr. Warren S. Thompson. Bureau of the Census, U. S. Department of Commerce.* 1948. *61 pp. For sale by the Superintendent of Documents, Washington 25, D. C. 30 cents.*

Written by the Director of the Scripps Foundation for Research in Population Problems, this report brings together in one publication population data for all of the metropolitan districts for the entire period for which such data are available, and supplements the figures presented in the regular census reports by providing metropolitan district estimates for a considerable number of cities originally shown on the less definite "adjacent territory" basis.

Chapters are included on the growth and distribution of metropolitan population, regional growth of metropolitan districts, growth of metropolitan districts by size, factors affecting the redistribution of population within metropolitan districts, the demographic significance of the growth of metropolitan districts, and their future growth.

A Local Civil Rights Audit

THE MONTCLAIR COMMUNITY AUDIT—*Montclair Intergroup Council.* 8*pp. Available from Community Relations Service,* 386 *Fourth Ave., New York* 16, *N. Y. and* LET'S LOOK AT OURSELVES, A BRIEF GUIDE FOR CONDUCTING A COMMUNITY AUDIT—*National Citizens' Council on Civil Rights,* 20 *W. 40th St., New York* 18, *N. Y.* 12 *pp.* 1948.

Two excellent and readable little documents which describe the now nationally famous Montclair Community Audit on civil rights and discrimination, and the action it brought about in the community. The reports suggest that an audit such as Montclair's could profitably be adopted as a worthwhile project in many other localities.

Big-City Snow Removal

SNOW AND ICE CONTROL IN CITIES OVER 200,000—*An American Public Works Association committee report,* 1313 *E. 60th St., Chicago* 37, *Ill.* 15 *pp.* $1 *to non-members.*

A tabulation that summarizes snow-removal practices in 31 large cities in the United States and Canada. The men making the study point out the inconsistencies in practice and the difficulties in drawing specific conclusions. The study does indicate a growing use of storm-warning systems, radio, and a careful application of the chlorides and other abrasives. It further points up the value of expanding public relations programs.

Moody's Government Manual

GOVERNMENTS AND MUNICIPALS, MOODY'S MANUAL OF INVESTMENTS, AMERICAN AND FOREIGN—*Moody's Investors Service,* 65 *Broadway, New York* 6, *N. Y.* 1949. 2038 *pp.* $54.

Essentially designed to provide users with financial and investment information, this annual volume contains data on 11,697 municipalities and taxing units which account for $17,750,000,000 or 95% of the total of municipal debt outstanding. The statement given on each taxing unit includes information on history and economic background, assessed value and tax rate, statement of bonded indebtedness and sinking funds, tax collection figures and percentage collected, receipts and disbursements, debt service requirements for a period of years, bonded debt schedules, defaults, etc.

Sections are also included on local housing authorities and on foreign governments and municipalities. A special features section contains much other data on municipal bond yields and trends as well as other information on municipal debt and tax statistics.

Finance officers in larger municipalities and municipal reference libraries should find much of value in this volume.

Local Budgeting Practice

FINANCIAL PLANNING FOR GOVERNMENTS—*Feb., 1949 issue of* Municipal Finance, *published by Municipal Finance Officers Association,* 1313 *E. 60th St., Chicago* 37, *Ill.* 32 *pp.* $1.50.

Thoughtful articles on various aspects of local budgeting operations are contained in this issue. An outstanding contribution is made by A. E. Buck in the lead article, "Next Steps in Local Budgeting." In it he reviews budgetary progress in the forty years since budgeting procedure was originally developed by the New York Bureau of Municipal Research.

California City Government

CALIFORNIA CITY GOVERNMENT—*By John C. Bollens and John R. McKinley. Bureau of Public Administration, University of California, Berkeley, Calif. Dec.,* 1948. *69 pp.* $1.25.

A scholarly and comprehensive review of the growth of municipal government in California, with special attention given to city problems and trends. An especially thoughtful section on "Unincorporated Urban Areas and Methods of Acquiring Public Services" recommends that there be new state legislation establishing a standard of population density for requiring by court order that an area either incorporate or annex. A 12-page reading list for citizens and administrators is also in the report.

City Parking Programs

WHAT ARE THE NATION'S CITIES DOING ABOUT TRAFFIC AND PARKING?—*Thirty-Fourth Street-Midtown Ass'n, Inc.,* 1 *W. 34th St., New York* 1, *N. Y. Dec.* 1948. 16 *pp.*

Report of a survey of 41 of the nation's largest cities which shows, briefly, what each is doing for relief of parking and traffic problems.

Municipal Home Rule Report

HOME RULE FOR AMERICA'S CITIES—*By Rodney L. Mott. American Municipal Association,* 1313 *E. 60th St., Chicago* 37, *Ill.* 1949. *Urban Action Series No.* 101. 68 *pp.* $1.50.

This is a non-technical report showing the actual effect of home rule in operation which should prove generally useful to public officials and to legislators. The practical questions involved in the successful use of home rule are considered: What is home rule? What opportunities for self-government does it offer to municipalities? How do local governments get it? In what specific ways can it be put in action? And finally, why is home rule worth arguing about? These and other major questions are discussed at length.

The author, who is Director of the Division of Social Sciences at Colgate University, makes a number of specific recommendations designed to extend the home rule principle.

Municipal Home Rule—An International Discussion

COMMUNAL AUTONOMY—*Digest of reports and proceedings of International Congress of Municipalities,* 1947. *International Union of Local Authorities,* 5, *rue de la Regence, Bruxelles, Belgium. Document* 289, *Aug.* 1948. 31 *pp.*

The origin and basis of the concept of communal autonomy or local home rule is discussed in this report. Present tendencies in various countries toward centralization or local autonomy are critically evaluated, and suggestions are made as to how obstacles to local autonomy can be reduced. The second part of the report contains a brief digest of municipal organization in various countries with regard to the method of election of members of local authorities, the administrative field left to local authorities, financial resources, and forms and methods of administrative control over local authorities.

New UN Planning Bulletin

HOUSING AND TOWN AND COUNTRY PLANNING—BULLETIN 1—*Department of Social Affairs, United Nations, Lake Success, N. Y. Available from International Documents Service, Columbia University Press,* 2960 *Broadway, New York* 27, *N. Y. Dec.,* 1948. 74 *pp.* $1.50.

The excellent initial issue of a new United Nations bulletin in the housing and planning field contains articles by G. D. H. Cole, Catherine Bauer and Maciej Nowicki. It also contains reports and discussions of construction progress in Asia and the Far East, India, Poland, Sweden, Canada, and Denmark. It has several technical reports, including one on the new building material of paper honeycomb case "sandwich panels." A section is devoted to International Organizations and Housing, and another reports on the International Congress at Zurich. Of major importance and value is a 16-page bibliography of planning and housing books and pamphlets, as well as a comprehensive and informative compilation of periodicals available from various countries.

The *Bulletin* should do a great deal to encourage an international exchange of knowledge and experience among both policy-making officials and administrators on the one hand and to technicians on the other. The first issue is off to a good start.

Steel Building Design

DESIGN OF STEEL BUILDINGS—*By Harold D. Hauf and Henry A. Pfisterer, third edition. John Wiley and Sons, Inc.,* 440 *Fourth Ave., New York* 16, *N. Y.* 280 *pp.* $5.

A reference book on steel building construction brought up to date by a more detailed discussion of welded framing construction. The text retains its thorough and practical approach to steel building design and construction, useful both to the student and the practicing engineer.

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Segregation in Washington

SEGREGATION IN WASHINGTON—*National Committee on Segregation in the Nation's Capital, 1901 South Ellis Avenue, Chicago 15, Ill.* 1948. 96 *pp.* 75 *cents.*

This booklet is a condensed summary of the research findings of the National Committee on Segregation in the Nation's Capital. The eight-month field study was conducted by a research sub-committee under instruction to investigate the conditions and causes of segregation and discrimination in Washington.

The text, prepared by Kenesaw M. Landis, well-known columnist, is generously illustrated by charts and graphs. The report's contents are explosive in nature, and reveal scandalous conditions of both official and unofficial segregation practices in every aspect of our nation's capital's community life. It is to be hoped that the report's impact will make itself felt upon those responsible for the city's improvement program and future development.

Model State Constitution

MODEL STATE CONSTITUTION, WITH EXPLANATORY ARTICLES—*Prepared by the Committee on State Government of the National Municipal League, 299 Broadway, New York 7, N. Y. Fifth edition, revised* 1948. 57 *pp.* $1. *Discounts on quantities.*

This new edition of the *Model State Constitution* is timed to the current movement for modernizing constitutions which already involves one-third of the states and is spreading rapidly. The new edition, including explanatory material, profits from recent experience in several states. It strikes at common weaknesses of state constitutions which encourage people to turn to Washington to compensate for failures at the state capital and city hall. The explanatory articles include discussions of local government by Arthur W. Bromage and intergovernmental relations by W. Brooke Graves.

British Housing Subsidies

HOUSING SUBSIDIES AND RENTS—*By J. R. Jarmain. Stevens & Sons, Ltd., London,* 1948. 294 *pp.* 25*s.*

This extensive and detailed study of the relation, or lack of it, between housing subsidies and rents is published under the auspices of the British Institute of Public Administration. The financial and administrative difficulties encountered by local authorities in handling housing subsidies in the inter-war period are evaluated. The implications of flat rate subsidies, the advantages of differential rent assistance, and the salient features of British housing acts are critically examined. The author recommends intensive research to construct an index of building costs, and to determine the bases of rent. Subsidies could then meet the criteria of responding to changing costs, correlating with local needs, and insure a consistent rent policy. The idea of tax relief or rate aid for the working classes as an alternative form of subsidy is put forth, although the author does so with trepidation.

United States housing administrators will find excellent material on the details and methods of the work of British housing authorities herein.

A Small Community Plan

A COMPREHENSIVE PLAN FOR THE BOROUGH OF WEST CALDWELL, N. J.—*Prepared for the Plan and Art Commission by Scott Bagby, 22 Pleasant Ave., Montclair, N. J. Dec.* 1948. *Mimeo. Charts. Tables.* 40 *pp.* $3.

An excellent discussion of concrete proposals for what a small community of 1,300 families can and should do to control its growth and prevent its unplanned absorption in the widening area of sprawl of the New York metropolitan area.

The methods suggested for control of subdivisions and division of the community into urban service areas are of special interest. The report points out that the insurance companies, utilities, banks and business interests could play a major role in county self-control and a more favorable tax situation by adopting policies of refusing to service financing in unsound locations, not designated as urban service areas. The suggestion is also made that the FHA could be a powerful force for a sound county tax base if it would coordinate its policies to such a pattern, instead of fostering an increased scattering of unsound sprawling growth.

Public Administration Courses

EDUCATIONAL PREPARATION FOR PUBLIC ADMINISTRATION, 1948-49—*Edited by Joseph S. Toner. Public Administration Service, 1313 E. 60th St., Chicago 37, Ill.* 44 *pp.* $1.

The third edition of this guide to education programs in the field of public administration in the United States has been compiled from questionnaires returned to Public Administration Clearing House by 117 colleges and universities in the autumn of 1948. Information on each university's program is included, as well as the name of the person who should be addressed for additional information in the university's department.

Southern State and Local Taxes on Manufacturing

TAXATION OF MANUFACTURING IN THE SOUTH—*By James W. Martin and Glenn D. Morrow. Bureau of Public Administration, University of Alabama, University, Ala.* 1948. 110 *pp.*

This study contains good information on Southern state and local tax systems as they apply to manufacturing. The study reports that manufacturing, as well as general economic well-being, is advancing more rapidly in the South than in the nation generally, although the advance appears to be restricted to a few states. No positive correlation is found to exist between tax loads and their distribution and rates of manufacturing growth. Some of the Southern states which are showing the most rapid industrial development have relatively heavy tax loads, whereas others have relatively light tax loads.

The study resulted from a cooperative undertaking of research reports from 11 states, and was published by the Bureau of Public Administration at the University of Alabama in cooperation with the Bureaus of Business Research at the Universities of Alabama and Kentucky.

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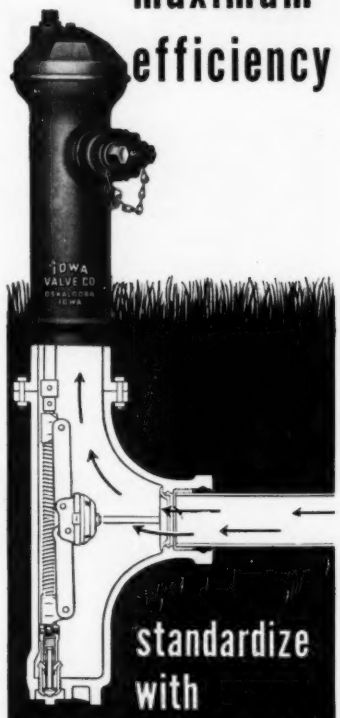

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State-Local Tax Discussion

MORE STATE AID AND MORE LOCAL TAXES?—*Tax Institute, Inc., 150 Nassau St., New York 7, N. Y. Forum Pamphlet Four. Dec. 1948. 28 pp. 50 cents.*

Five excellent discussions on the subject of broadening municipal revenue sources or increasing state aid are presented in this report. The concluding paper by Harold L. Henderson, Executive Director, Minnesota Institute of Governmental Research, declares that many states might well increase the proportions of shared taxes and state aids, if they are not now giving over 40% of their revenue to local units. It also points out that the situation calls for a high degree of state-local cooperation, and that local communities must make some effort to solve their own problems.

State Aid to Local Governments

STATE AID TO LOCAL GOVERNMENTS—*Governments Division, U. S. Bureau of the Census, Washington, D. C. State and Local Government Special Study No. 28. 1948. Tables. 54 pp.*

This report was undertaken at the urging of the American Municipal Association, which assumed the cost of its publication. The report shows that the amount of state aid to local governments has risen materially in recent years, approximately keeping pace with the rate of increase in state revenue. Fiscal aid paid to local governments by the 48 state governments amounted to $2.6 billion in fiscal 1947. Of all general revenue of local governments, state aid accounted for 28%. A detailed breakdown by states is presented, showing aids received by the various local governments.

California Planning Data

CALIFORNIA PLANNING PROGRESS, 1948—*California Chapter, American Institute of Planners. Pub. by the John Randolph Haynes and Dora Haynes Foundation, 2324 S. Figueroa St., Los Angeles 7, Calif. 36 pp.*

This report was prepared by the California Chapter of the A.I.P. because of the fact that funds for state planning purposes were not provided by the Legislature for the fiscal year 1948-49. The Chapter felt that in order to uphold interest in planning throughout the state, the compilation of the information in the report should not be omitted for this year.

The report reveals that California now has 193 city planning commissions, and at least 53 county planning commissions. The report gives information regarding planning activity in the state; it contains statistical data on planning commissions as well as the names and addresses of their members and of members of the California chapter

Toll Roads Opposed

WHY THE TOLL METHOD OF FINANCING ROADS IS UNSOUND—*National Highway Users Conference, 938 National Press Bldg., Washington 4, D. C. 1948. 14 pp.*

Pictorial material and case studies of existing toll roads are used in this booklet as an argument against the further spread of toll roads. The booklet cites the undemocratic and uneconomic aspects of toll roads and points out that they may block completion of the 40,000 mile Interstate Highway System.

1949 Housing Directory

HOUSING DIRECTORY, 1949—*National Assn. of Housing Officials, 1313 E. 60th St., Chicago 37, Ill. Dec. 1948. 139 pp. $5.*

This new edition of the housing directory lists 571 local housing authorities. It also includes sections on other municipal, county, state, national and international agencies concerned with housing. There are new sections on urban redevelopment agencies, housing research organizations, and insurance company investment in housing.

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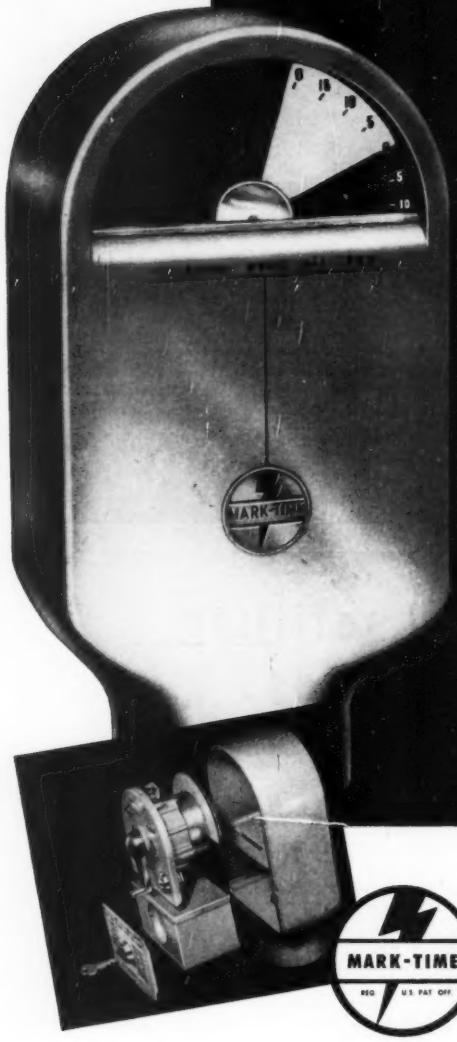

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New York Rebuilding Proposals

HOUSING POLICY IN THE EXPANDING REGION, A RETURN TO NEIGHBORHOOD LIVING—*By Herman T. Stichman, New York State Commissioner of Housing, 270 Broadway, New York 7, N. Y.* 1948. 18 *pp.*

An address delivered at the third Conference of the Regional Plan Association in New York City which effectively focuses attention on the need for neighborhood planning in the city. Commissioner Stichman cites observations on integrated planning abroad, and goes into considerable detail on the forces which exist to aid in creating neighborhoods in New York City, if coordination were possible. These include an existing state loan fund of $435,000,000 for housing, with an additional $300,000,000 anticipated in the current legislative session; the $267,000,000 housing program of New York City; possible Federal aid; a five-year capital budget program of $754,000,000 for various public improvements, and existing police powers for enforcement of housing laws.

The Commissioner suggests a tri-state joint Cities and Counties Planning Commission for the entire metropolitan region, whose recommendations would be followed by the municipalities concerned, as well as the creation of a new Board of Industrial and Neighborhood Planning to coordinate the programs of municipal agencies for the building of integrated neighborhoods, and for the promotion of participation by business, industrial, and civic interests in redevelopment schemes.

State Services Guide

A GUIDE TO STATE SERVICES—*Published by New York State Department of Commerce, 112 State St., Albany 7, N. Y.* 1948. 151 *pp.*

Second edition of a guide which lists briefly and indexes fully the many services available to communities, their officials, their organizations and agencies, public and private, through the several Departments and Commissions of the New York State Government.

Model Cash Basis Budget Law

MODEL CASH BASIS BUDGET LAW—*National Municipal League, 299 Broadway, New York 7, N. Y.* 1948. 22 *pp.*

Prepared by the Committee on a Program of Model Fiscal Legislation for Local Governments, this carefully evolved model law represents the best thought available on the subject of county and municipal budgeting.

Its purpose is to establish a standard procedure for the making and administration of budgets, the determination of the amount of taxes and other revenues, the borrowing of money in anticipation of the receipt of revenues, the establishment of appropriations, the payment of debt, and the control of other expenditures by counties and municipalities. Its provisions are intended to enable governing bodies to make financial plans for both current and capital expenditures, to ensure that executive staffs administer their respective functions in accordance with these plans, and to permit taxpayers and investors to form intelligent opinions based on sufficient information as to the financial policies and the administration of the counties and municipalities in which they are interested.

Public Administration References

SOURCE MATERIALS IN PUBLIC ADMINISTRATION—*Public Administration Service, 1313 E. 60th St., Chicago 37, Ill. Publication No. 102-A.* 1948. 30 *pp.* $1.

The purpose of this pamphlet is to provide in brief form a handy guide to the current and recent literature in the field of public administration. Though not all-inclusive, it does, however, furnish selective lists of basic sources and reference books, with brief annotations, together with a comprehensive listing of the more recent texts, treatises, and special studies in the field, classified by subject, and subject bibliographies.

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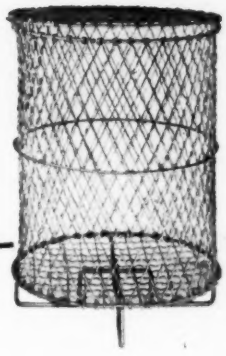

A Community Council's Case Story

ADVENTURE IN COOPERATION, COMMUNITY BUILDING IN A CENTRAL SCHOOL DISTRICT—*Bureau of Adult Education, State Education Department, Albany, N. Y.* 1949. 24 *pp.*

This is a well-illustrated case story of how the Columbia Community Council came into being in 1946 and how, through community organization, the Council accomplished a great number of improvement projects in planning and civic administration, communications, and cultural activities. This case story is intended to bring to directors of adult education, community leaders and interested citizens, suggestions they can put to work in their own hometowns.

Baltimore's Housing Law Enforcement Program

HOUSING LAW ENFORCEMENT AND THE BALTIMORE CITY HEALTH DEPARTMENT'S ATTACK ON THE ROCK-BOTTOM SLUMS—*By Huntington Williams and Wilmer H. Schulze. Baltimore City Health, Dept.* 1948. *Mimeo.* 9 *pp.*

A well-written description of the work of the Baltimore City Health Department and its cooperation with other city departments in enforcing ordinances pertaining to housing and sanitation. A brief account is also included of Baltimore's central housing court and the assignment of a group of 16 police officers to devote their full time to the correction of unsanitary conditions and certain housing violations. Throughout the report it is emphasized that enforcement is only one approach to solving the housing problem.

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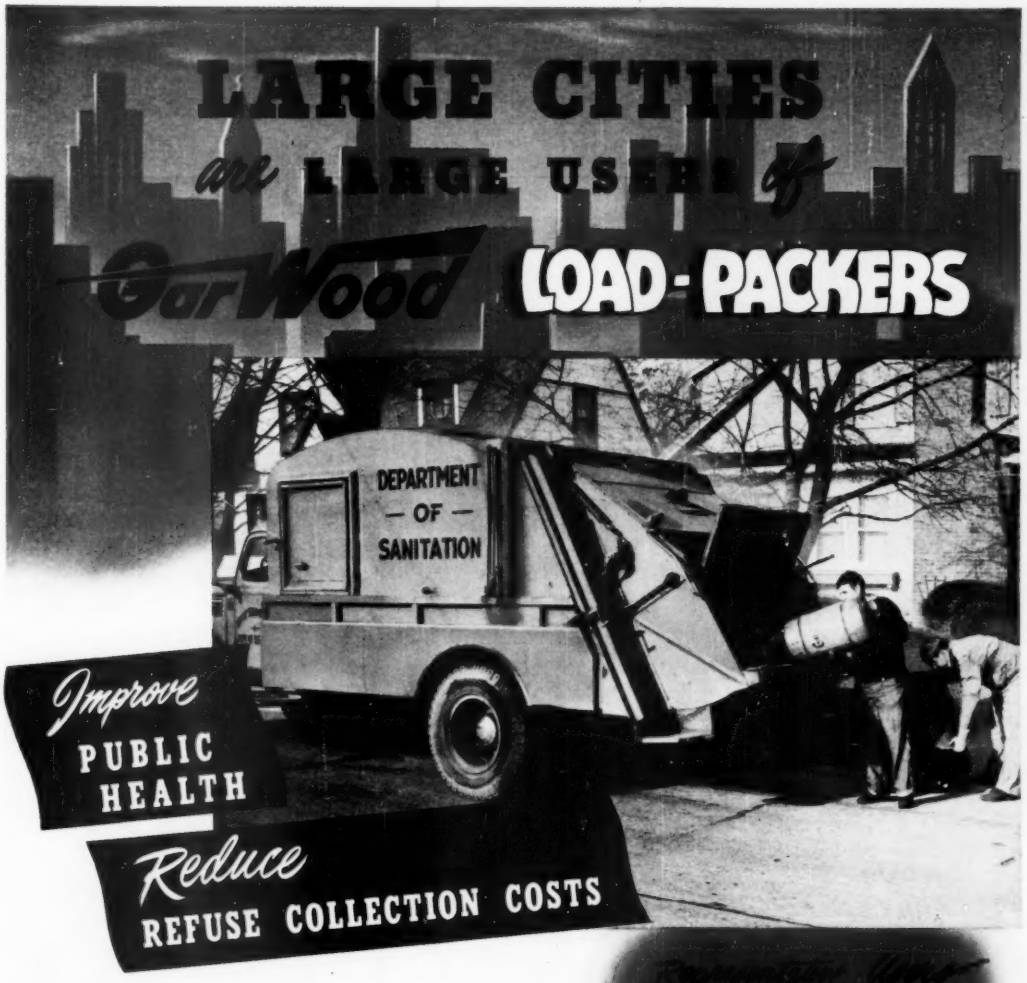

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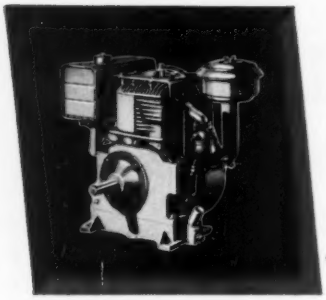

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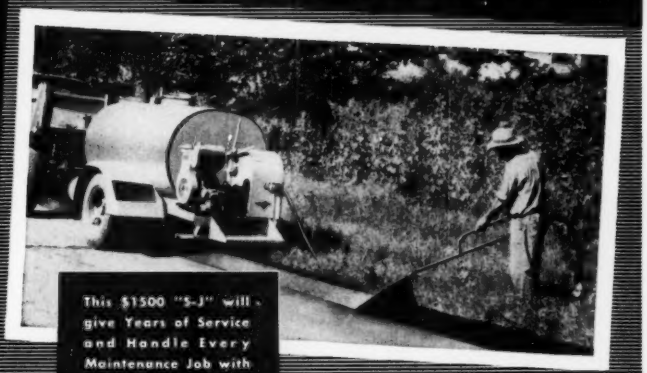

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News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings

Philadelphia Launches Compact Fireboat

By J. E. DUNCAN
Detroit Diesel Engine Division
General Motors Corporation

Philadelphia's new diesel-powered fireboat, the *Bernard Samuel*, delivers 5,875 gpm. at 150 psi with all four pumps performing simultaneously. Costing only $200,000, and 75 feet long, the boat is powered by General Motors diesel engines. Draft is 7½ feet aft and 4 feet forward.

To the City of Philadelphia, with its extensive and steadily developing commercial waterfront properties along the Delaware River, the problem of adequate fire protection had long been one of real concern. When it became apparent that the three existing steam fireboats (all over 25 years old) could no longer be depended on to handle the increasing responsibility, city officials consulted with the National Board of Fire Underwriters and decided to build a small fireboat with a capacity of 5,000 to 6,000 gpm. It was at this point that designer Thomas D. Bowes was called into the picture to prepare plans and supervise the vessel's construction. Study of diesel fireboats in other ports indicated that the new boat should have the following characteristics:

1. Pumping capacity of 5,000 to 6,000 gpm at 150 psi.
2. Smallest practical size and strictly functional design.
3. Machinery and equipment of the simplest type.
4. Single screw to reduce possibility of damage to propeller from floating debris or ice.
5. Design characteristics and reinforcing to meet ice conditions.
6. Large trim tanks fore and aft to reduce draft.
7. Welded steel construction and built to conform with American Bureau of Shipping and Coast Guard standards.
8. Maximum propulsion and pumping efficiency with both services provided by the same power plant.

The ship as constructed can operate in water less than 6 feet deep, release itself if accidentally grounded, break down heavy ice when pushing herself up on a floe.

The 800-hp diesel main power plant consists of four 6-cylinder GM engines mounted on a common base and driving the propeller shaft through a single 4 to 1 reduction gear. Due to the fact that the engines can be individually de-clutched and turned to pumping duty as the need demands, it was necessary to install only one engine plant to handle both pumping and propulsion. Each engine is equipped with a 166-bhp heavy-duty front power take-off with Rockford clutch and drives a separate De Lavel two-stage centrifugal pump of 1,500 gpm at 150 psi at 1,800 rpm. Flexible couplings have been fitted between the engine and pump shaft to take care of any misalignment that might develop and eliminate torsional vibrations. Ship electrical service is supplied by a Buda 3-kw 120-volt diesel-generator dc set and a 2-kw 110-volt Star generator V-belt connected to the main power plant. Batteries are floated on the line. An electrically driven Gardner-Denver air compressor operates the air horn, electric bilge and ballast pump, and oil-fired hot-water heating system.

On deck there are three fire monitors of 1,500-gpm capacity in addition to six 3½-inch hydrants capable of supplying 12 standard 2½-inch fire hoses. Two hose reels of the swivel type are operated by gear cranking. One reel takes 1,000 feet of 3½-inch hose and the other 1,000 feet of standard 2½-inch line.

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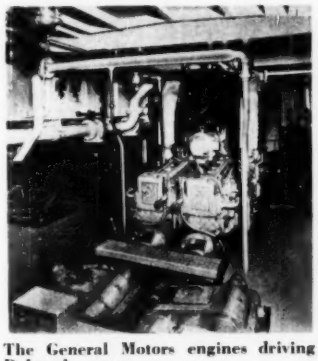
Compressor—Gardner - Denver Co., Quincy, Ill.
Engines—GM Diesel-Johnson & Towers, Philadelphia, Pa.
Exhaust fan—E. J. Willis Co., 93 Chambers St., New York, N. Y.
Exhaust mufflers—Maxim Silencer Co., Hartford 1, Conn.
Fire monitors—F. N. McIntire Brass Works, 221 High St., Boston, Mass.
Generators—3 KW 120 V, The Buda Company, Harvey, Ill.
2 KW 110 V, Star Marine Engine Works, Oakland, Cal.
Heating system boiler—American Radiator and Standard Sanitary Corp., Pittsburgh, Pa.
Hose reels—Wirt & Knox Mfg. Co., 2300 W. York St., Philadelphia, Pa.
Insulation—Johns-Manville, New York 16, N. Y.
Pumps—De Laval Steam Turbine Co., East Trenton 2, N. J.
Searchlight—Carlisle & Finch Co., Cincinnati, Ohio.
Switchboard—Smith-Meeker Engineering Co., 125 Barclay St., New York, N. Y.
Transfer pumps—Blackmer Pump Co., Grand Rapids 9, Mich.



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The company pioneered the production of cast iron pipe by the deLavaud centrifugal casting process in 1921, and the improved Super-deLavaud pipe, developed 11 years later, now comprises more than 85% of the company's present production.

The company began the production of centrifugally cast steel and iron tubular products during World War II.

New De Laval Ad Manager

Walter Rahel

Walter Rahel has been appointed advertising manager for the De Laval Steam Turbine Co., Trenton, N. J., manufacturer of turbines, pumps, compressors, and gears.

With a background of engineering from the University of Cincinnati, Mr. Rahel was employed in the advertising department of Ingersoll-Rand Inc., before joining De Laval.

Mast-Foos Acquires Ideal Power Lawn Mower

The Mast-Foos Mfg Co., Springfield, Ohio, makers of the Buckeye hand and power mowers, has bought the Ideal Power Lawn Mower Division of the Indian Motorcycle Co.

Dallas B. Winslow, head of Mast-Foos, announced that Ideal mowers will continue to be manufactured in Springfield, Mass.

Radio Transmitter-Receiver

Radio transmitter-receiver Type 2490 is a flexible land station unit for operation in the 152- to 162-mc band. It is the latest addition to the new Link line of compact, low-cost equipment. It is housed in an attractive rack cabinet 21 inches wide, 11 inches deep, and 34 inches high. An engineering bulletin describing this new unit may be obtained from Link Radio Corporation, 125 West 14th St., New York 11.

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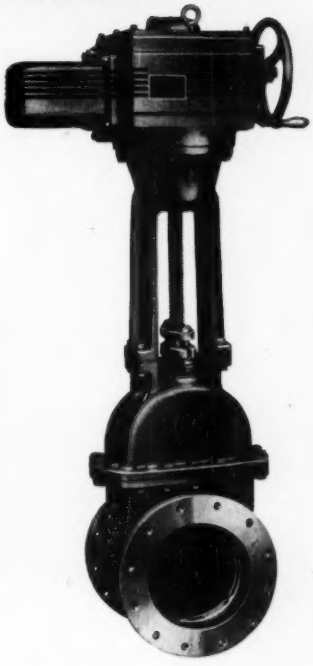

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OFFICE-WAREHOUSES IN NEW YORK, CHICAGO, SAN FRANCISCO · SALES REPRESENTATIVES IN PRINCIPAL CITIES

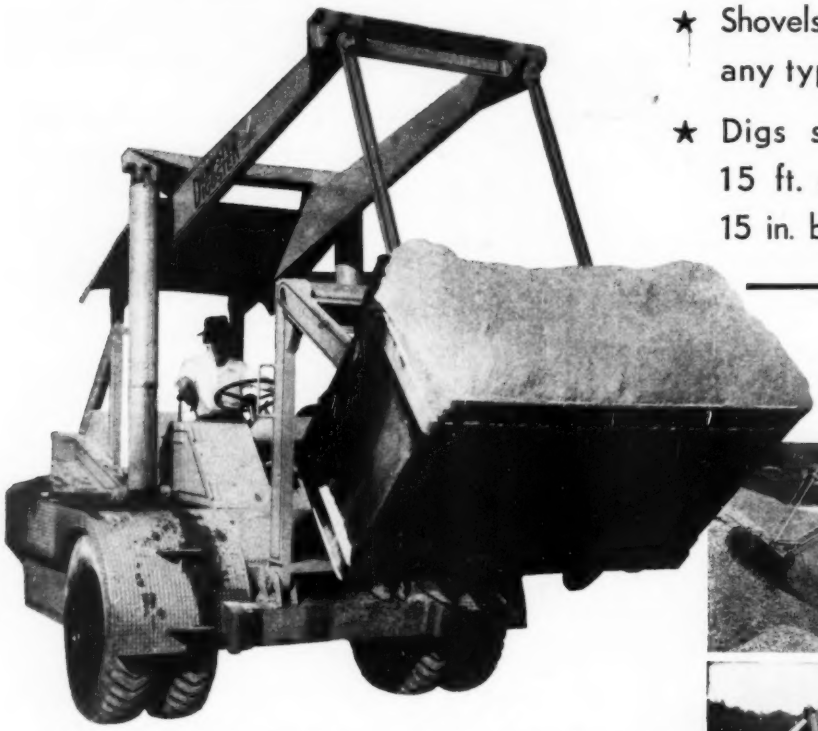
NOW YOU GET INDEPENDENT CROWD AND HOIST ACTION WITH THE

DEMPSTER DIGGSTER

TRADE MARK

THE AUTOMOTIVE HYDRA-SHOVEL THAT-

- ★ Shovels and Loads any type material
- ★ Digs solid earth 15 ft. above and 15 in. below grade



Here is a rubber tired automotive shovel that is equally at home in excavation work; in stockpiling, loading or on the road. It is the most compact and maneuverable, one-man-operated, rubber tired automotive shovel and loader available. It is the only machine built with simultaneous but independent hydraulic crowd and hoist action. Variable crowd action at any dipper position means it can dig lower—15 inches below grade. Exclusive hoisting action means it can dig higher—digs out a 15 ft. bank. Extraordinary dumping height and reach means easier loading, even distribution of load in the largest of trucks. Dempster-Diggster buckets are easily interchangeable. For digging, a 1 cu. yd. (heaped) bucket with hardened steel teeth is used. For loading work, stockpile buckets are available in 1¼, 1½ and 2 cu. yd. capacities. Hoisting, Crowding, Steering and Braking are all 100% hydraulic.

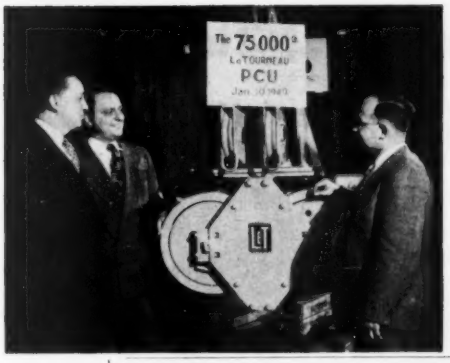
Large photo above shows close-up of Dempster-Diggster with 1½ cu. yd. digging bucket loaded. At right, top: Loading crushed stone. Center: Diggster dumps crushed stone into truck. Right, bottom: Digging out a high bank.

Write today for complete information.

DEMPSTER BROTHERS INC.

839 Dempster Bldg. **Knoxville 17, Tenn.**

LeTourneau Completes 75,000th Power Control Unit



R. G. LeTourneau, Inc., Peoria, Ill., manufacturer of earth-moving and construction equipment, has completed its 75,000th power-control unit, a cable-control device that actuates earthmoving tools towed by or mounted on tractors.

Here Merle R. Yontz, vice-president and treasurer; Roy E. McCluskey, vice-president and general sales manager, and Harold Jeter, manufacturing manager, view the completed mechanism.

Riddell Adds to Sales Staff

A. William McGraw has been engaged in the capacity of sales-promotion manager for Warco motor graders and Hercules road rollers by the W. A. Riddell Corp., Bucyrus, Ohio. His previous experience includes the position of district representative in the St. Louis area for a manufacturer of a construction machinery line.

Mack Truck Appointments

The following district-manager appointments have been made by Mack Trucks, Inc., Empire State Bldg., New York, N. Y.:

J. E. Donovan, San Francisco branch office.
J. W. Biggins, Louisville, Ky.
H. J. Fikejs, Kansas City, Mo.
T. J. Colter, Milwaukee, Wis.
A. P. Cowles, Springfield, Mass.
R. J. McGivney, Worcester, Mass.

Hendrey New Representative

W. R. Hendrey Co., Smith Tower, Seattle 4, Wash., has been appointed territorial representative in Washington and Oregon for the Marcus Transformer Co., Inc., Hillside, N. J.

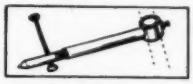
Increased Trend to Dual Fuels

"A substantial percentage of the diesel engines produced in America over the next several years will be of the dual-fuel or gas-diesel type," predicted Ralph L. Boyer, vice-president and chief engineer of the Cooper-Bessemer Corp., Mt. Vernon, Ohio, before the annual meeting of the Society of Automotive Engineers in Detroit, because of cost-saving benefits resulting from the ability to use gas or oil—whichever is plentiful in supply and economical.

In sections of the country where the gas supply is subject to sudden cut-off under adverse weather conditions, the dual-fuel assures operators of uninterrupted service.

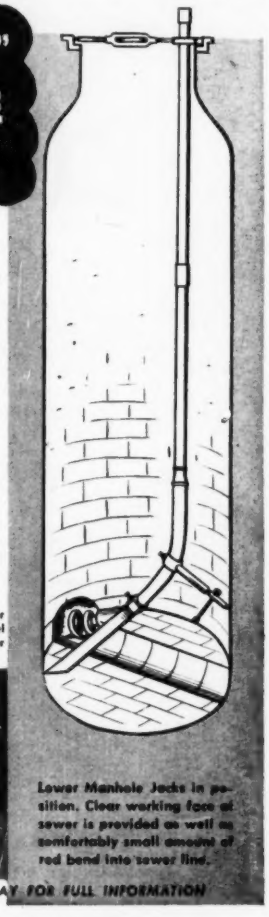
NEW—"FLEXIBLE" LOWER MANHOLE JACKS SAVE TIME AND WORK AND EQUIPMENT

"FLEXIBLE" experience again provides new methods of simplifying tough jobs. These two new Lower Manhole Jacks bring sewer and line cleaning operations another step further into the open. They also speed tool changing. Note how the coupled rod guide is quickly, firmly, simply anchored at the bottom of the manhole. Also note that the face of the bell is held away from the lip of the sewer line itself. This enables operators to see roots before they jam tight in the rod guide.



Adjustable Back Jack (Optional use). Perfect for getting additional anchorage of rod guide. Sold separately.

Adjustable Foot Jack. Ideal for use with proven "Flexible" Steel Rod system of cleaning sewer lines. Sold separately.



Lower Manhole Jacks in position. Clear working face at sewer is provided as well as comfortably small amount of rod bend into sewer line.

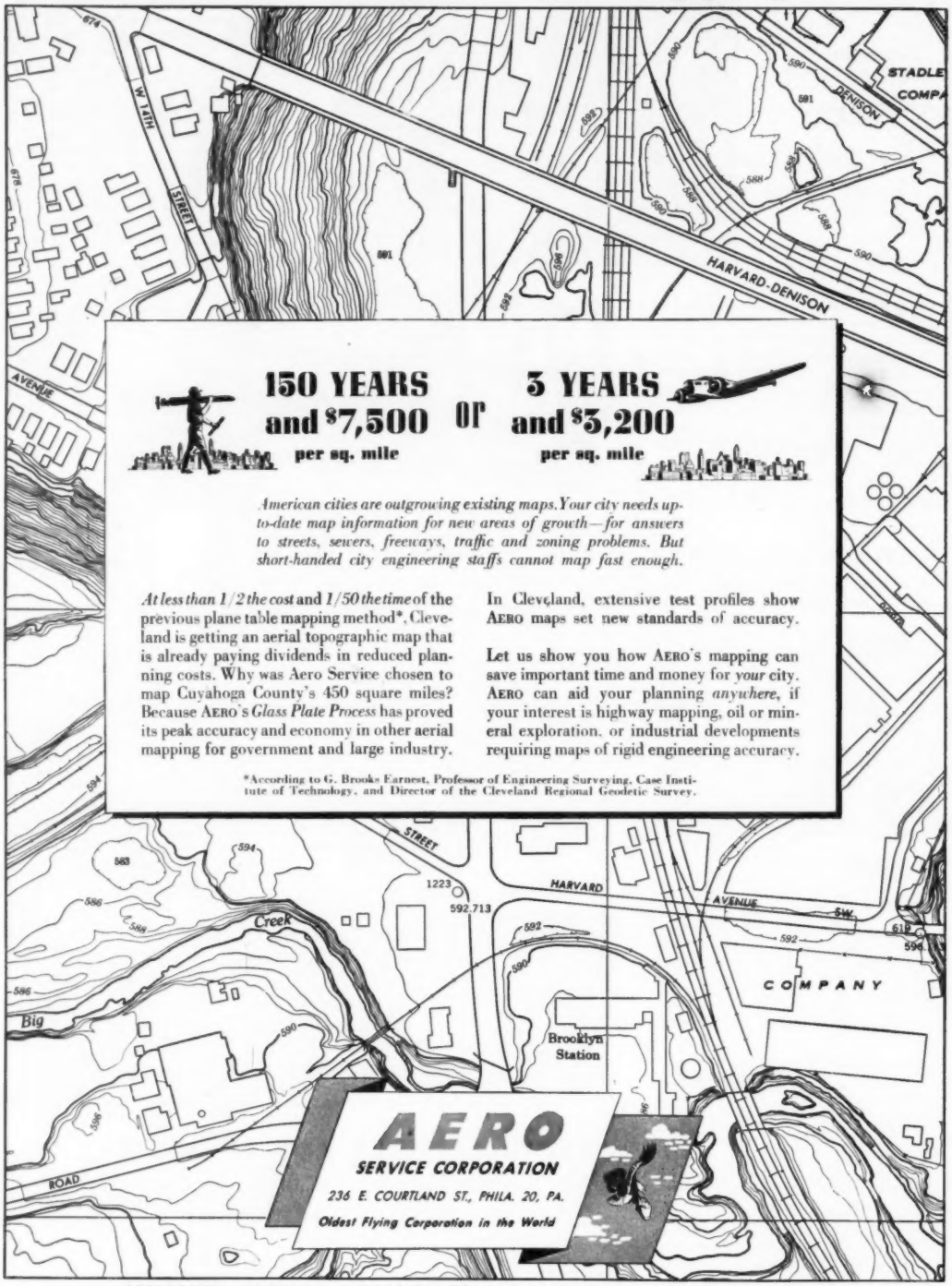
ASK YOUR NEAREST "FLEXIBLE" OFFICE TODAY FOR FULL INFORMATION

FLEXIBLE SEWER-ROD EQUIPMENT CO.

9059 Venice Blvd., Los Angeles 34, California

141 W. Jackson Blvd., Chicago, Ill.
401 Broadway, New York 13
147 Hillside Ter., Irvington, N. J
P. O. Box 165, Atlanta
2011 Central Ave., Memphis, Tenn.
801 E. Excelsoir Blvd., Hopkins, Minn.
29 Cordan Ave., Roslindale 31, Mass.
P. O. Box 447, Lancaster, Texas
41 Greenway St., Hamden, Conn.
3786 Durango Ave., Los Angeles 34, Calif.
909 N. Homewood Ave., Pittsburgh 8, Pa.
4455 S.E. 24th Ave., Portland 2, Ore.

How Would You Order This Mapping Work?



150 YEARS and $7,500 per sq. mile OR **3 YEARS and $3,200 per sq. mile**

American cities are outgrowing existing maps. Your city needs up-to-date map information for new areas of growth—for answers to streets, sewers, freeways, traffic and zoning problems. But short-handed city engineering staffs cannot map fast enough.

At less than 1/2 the cost and *1/50 the time* of the previous plane table mapping method*, Cleveland is getting an aerial topographic map that is already paying dividends in reduced planning costs. Why was Aero Service chosen to map Cuyahoga County's 450 square miles? Because AERO's *Glass Plate Process* has proved its peak accuracy and economy in other aerial mapping for government and large industry.

In Cleveland, extensive test profiles show AERO maps set new standards of accuracy.

Let us show you how AERO's mapping can save important time and money for *your* city. AERO can aid your planning *anywhere*, if your interest is highway mapping, oil or mineral exploration, or industrial developments requiring maps of rigid engineering accuracy.

*According to G. Brooks Earnest, Professor of Engineering Surveying, Case Institute of Technology, and Director of the Cleveland Regional Geodetic Survey.

AERO
SERVICE CORPORATION
236 E. COURTLAND ST., PHILA. 20, PA.
Oldest Flying Corporation in the World

REPRODUCED ABOVE IS A PORTION OF MAP SHEET P-16 OF CLEVELAND, OHIO

Manufacturers' Division of American Road Builders' Association Gets New President

W. B. Greene, left, retiring president of the Manufacturers' Division, American Road Builders' Association, congratulates R. W. Stiles, new president, at the ARBA Conference and 46th Annual Meeting held last month in Washington, D. C.

Steel Sanicon Container

The new single- and double-unit models, of the Sanicon sanitary garbage-can container manufactured by

Left, the can is removed; right, the can in position for refuse acquisition.

The Sanicon Co., Western Union Bldg., Norfolk, Va., are made of 20-gauge steel, treated to prevent rust, and bonderized and enameled inside and out. Previous models were made of an aluminum alloy, and although the light weight was regarded as an advantage the product failed in some instances to stand up under rougher usage than the manufacturers had anticipated.

Although the company believes that most Sanicons are giving satisfactory service and will last a lifetime unless subjected to abuse, it has announced that it would replace any of the old models with new ones, allowing the full purchase price as credit and not requiring return of the previously purchased Sanicons.

Designed to give positive protection against rats, cats, flies, and other disease-carrying vermin which are attracted to open garbage, the Sanicon has access doors which latch securely, and gravity-closing feeder doors that fit tightly enough to keep out roaches and other insects. Aprons which funnel refuse directly into the cans are easy to keep clean, and a built-in DDT fumigator inside the container affords protection from insects and odors.

THE NEW LOOK
for the
MIGHTY MIDGET

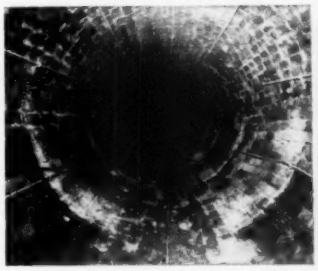
BREAK WITH POWER, SPEED, ECONOMY

The MIGHTY MIDGET reduces the cost of breaking asphalt and concrete to a minimum cost that is unequalled by other methods. Tamps backfill at an unbelievable pace; gives high density. All controls within operator's reach. Operates on 105 C.F.M. compressor.

Ask your dealer or write for complete information.

R.P.B. CORPORATION
2751 EAST 11th STREET - LOS ANGELES, CALIFORNIA

"GUNITE" RENEWS OLD BRICK SEWERS



These pictures show how we are rebuilding nearly four miles of combination sanitary and storm sewers at Bloomington, Illinois, by lining them with mesh reinforced "GUNITE."

Erosion of mortar joints and dislodged bricks made many sections of these 65-year-old sewers both dangerous and inefficient. The new "GUNITE" linings will restore them to greater than original strength and result in many more decades of useful service at a fraction of the cost of new sewers.

All work is done without opening streets. Sewer service is maintained by installing temporary flumes or by-passing through relief sewers.

This job and many other profitable uses of "GUNITE" are illustrated and described in our new 64-page General Bulletin D2400. Send for your free copy today.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE CEMENT GUN

Get the *Most*
Out of Your Garbage-Collection Budget

More Sanitation
More Efficiency
More Satisfied Citizens
More For Your Money

Use HEIL Colecto-Paks

Colecto-Pak bucket unloads in less than a minute.

Cut-away view showing how packer plate compresses the load.

Body raises to 45° dumping angle in 12 seconds. This and tapered body design assures fast, clean discharge.

You find Heil Colecto-Paks at work in cities throughout our country and the world at large.

Most of these units were purchased as the result of severe competitive tests. These tests proved that the hydraulically-operated Colecto-Pak costs less to operate and maintain — that its smooth, dependable performance provides greater health protection, speeds up garbage collection and disposal.

Features are: Totally-enclosed body that eliminates the hazards of flies. An average loading height of 35 inches so that crews load easier, faster, and with less strain. A packer plate that compresses the material so that 24 yards of wrapped garbage are carried in a 12-yd. body. Tapered body construction and fast dumping action for quick, clean discharge.

Heil Colecto-Paks are available in 9- and 12-cu. yd. capacities. Get the most out of your budget dollars — specify Colecto-Paks on your next bid. Write us for latest literature describing these units and our complete line of garbage bodies. BH-144

THE HEIL CO.

Dept. 4339, 3043 W. Montana Street, Milwaukee 1, Wisconsin
Factories: Milwaukee, Wis. — Hillside, N. J.
District Offices: Hillside, Washington, D. C., Atlanta, Milwaukee, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Los Angeles, Seattle

HEIL SCRAPERS

HEIL ELEVATING TAILGATE

HEIL DOZERS

HEIL BODIES & HOISTS

Mi-Co Appoints Clark Sales Agent

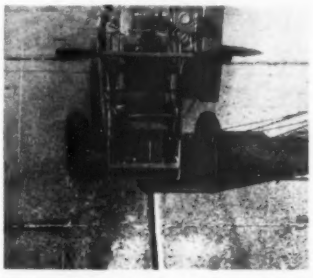
Mi-Co Meters, a division of The Michaels Art Bronze Co., 231 Court St., Covington, Ky., has appointed James P. Clark, 7007 Hudson Ave., Guttenberg, N. J., a sales agent in northern New Jersey.

James P. Clark

Mr. Clark served in the legal department of the American Petroleum Industries Committee and the Aetna Casualty & Surety Co. in New York City. After serving in the armed forces, he entered the fire-equipment field, representing leading manufacturers, and organized his own company, Fire Prevention Service. This prompted his expansion into the general field of municipal supplies.

High-Speed Cleaning Of Concrete Joints

The G. H. Tennant Co., 2530 N. 2nd St., Minneapolis 11, Minn., has developed a one-man high-speed concrete grooving machine with a self-propelling action. The new machine removes old seal and simultaneously cuts a clean, correctly profiled groove to form a tight bond with the new sealing material.



This uniform groove is free of bituminous smears. The front of the machine has a square mirror which enables the operator to position the machine accurately, assuring a clean-cut job.

Working from 5,000 to 20,000 lineal feet per day, the machine is powered by a 13.3-hp air-cooled Wisconsin gasoline engine equipped with a self-starter, generator, and storage battery. The cutting action is accomplished by a series of 4-inch forged alloy steel cutters mounted on a cutter head that revolves at 2,400 rpm. By changing spacing of the cutters, joints or fissures from ⅜ to 2¼ inches wide can be cleaned and regrooved to the desired dimensions. The depth of the cut is about 1¼ inches.

HERE'S TO City HEALTH AND A PROBLEM SOLVED

Backyard garbage cans represent more than a collection and disposal problem to any city. They are a menace to community health.

But there's a new method of garbage disposal that safeguards health and solves the collection problem—all at once. It's the

WESTINGHOUSE WASTE-AWAY

installed in a kitchen sink. It allows the housewife to dispose of food waste BEFORE IT ACTUALLY BECOMES GARBAGE—right down her sink drain.

It eliminates the garbage can, breeding place of disease.

It solves the problems that are always present in operating a municipal garbage collection service.

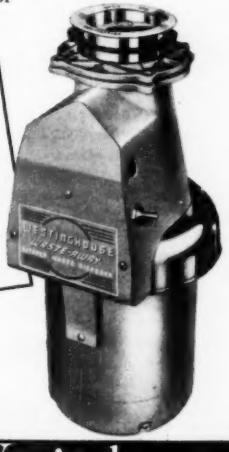
Does it overburden the sanitary sewer system?

Officials of some cities once thought so. But after careful analysis and investigation they found the contrary to be true. Now they favor and recommend the Waste-Away.

You can safely do the same.

A reputation built up over the years in the manufacture of electric appliances is your assurance of the efficiency of the

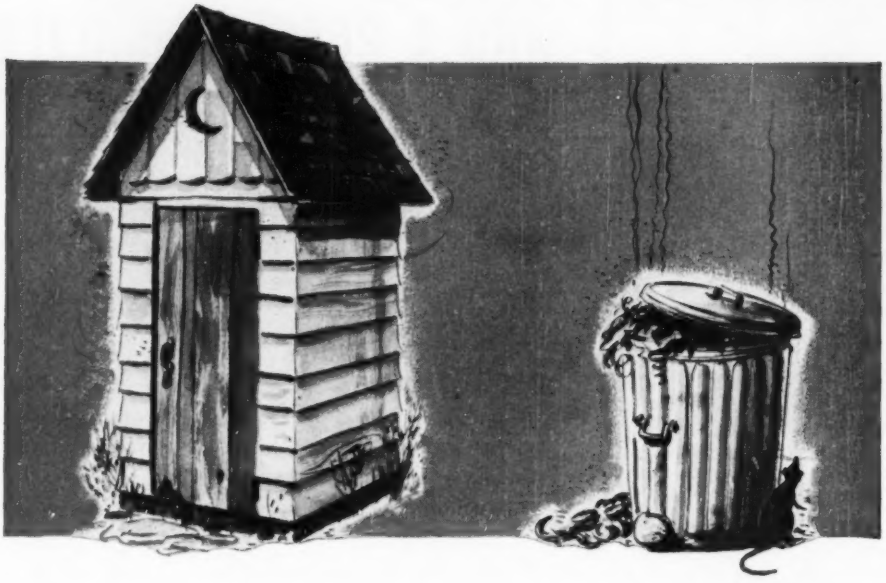
Westinghouse
WASTE-AWAY
ELECTRIC GARBAGE DISPOSER



WESTINGHOUSE ELECTRIC CORPORATION
Plants in 25 Cities . . . Offices Everywhere
Appliance Division • Mansfield, Ohio

YOU CAN BE SURE..IF IT'S Westinghouse

There's No Place for Either In Today's Municipal Thinking!



That's Why Progressive City Officials Are Urging Architects, Builders and Plumbers to Recommend Modern Kitchen Disposers!

There was a time when the home garbage disposer was generally considered a "novelty" . . . a "gimmick," if you will. And, just as many people predicted the auto would never replace the horse, when the first disposers came out, precious few municipal officials foresaw that it would ever replace the garbage can.

But that is exactly what is happening—to the benefit of all concerned. Slowly but surely more and more homes are disposing of their own garbage this better, more sanitary way. That *all* homes will eventually be equipped with disposers is inevitable. Because home disposers offer the *only* solution to the municipal garbage problem, with all of its attending high costs and danger to public health.

Today almost every American city has given its stamp of approval to the modern disposer. For, besides the obvious contribution to the safeguarding of the public health, city officials know that when *all* homes are equipped with disposers tremendous savings can be effected in the collection of refuse.

The new American Kitchens Disposer. As was cited in *The American City's* study, "Ground Garbage," (Feb. 1948 issue) universal use of such disposers (1) should not overload a sewer system, (2) nor cause trouble of any kind in any well-designed sewer, (3) will effect material savings in the cost of handling garbage.

WHY ENGINEERS SAY THE NEW AMERICAN KITCHENS DISPOSER IS SUPERIOR TO PREVIOUS TYPES

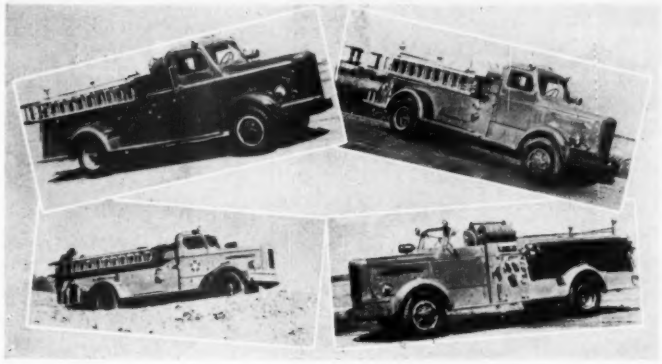
While *all* nationally-advertised disposers have been proved satisfactory, engineers consider the new American Kitchens Disposer the most advanced. For several reasons: the American Kitchens Disposer provides a patented "knee-action" hinge in the center of each pulverizer arm (see diagram) so that disposer absolutely can not jam—even on contact with metal! Also, engineers approve its additional *vertical* shredders, saw-tooth hammers, easier servicing.

American
KITCHENS DISPOSER

PRESENTED BY THE MAKERS OF FAMOUS AMERICAN KITCHENS

AMERICAN CENTRAL DIVISION AVCO CONNERSVILLE, INDIANA

Four Basic Models of Fire Trucks



Four basic pumping-engine models are manufactured by The Four Wheel Drive Auto Co., Clintonville, Wis., with the option of open or closed cab. Models offer the choice of a 500-gallon-a-minute pumper (upper two), a 750-gpm. (lower left) or a 1,000-gpm (lower right). Standard wheelbase of all models is 160 inches. Standard equipment includes a 150-gallon tank and 150 feet of ¾-by-4-ply booster hose with a ¼-inch shut-off nozzle on the hose reel.

Koppers Appoints Macon

Assistant sales manager since 1947 of the Tar Products Div., of the Koppers Co., Inc., Pittsburgh 19, Pa., J. C. Macon, Jr., has been promoted to sales manager of the division.

J. C. Macon, Jr.

Mr. Macon's previous experience has included work with the Gulf Oil Corp. With Koppers, he has worked in the creosote - oil sales department, as assistant district manager of the Birmingham office, and as sales manager of the tar department.

Diesel-Engine Lubricant Counteracts Sulphur-Fuel Ills

Designed to counteract the harmful effect of high sulphur fuels, the new diesel-engine lubricant developed by the D-A Lubricant Co., Inc., Indianapolis, Ind., is an additive-type lubricant that eliminates the formation of engine sludge and the resulting stuck rings and high liner wear.

The new D-A "Extra-Treated" diesel oil, recommended only for use with high-sulphur-content diesel fuels, is a supplement to the company's regular D-A diesel oil for use under all ordinary conditions.

New Partners, New Name For Engineering Firm

George N. Schoonmaker, Spencer D. Downing, Bernal H. Swab, and Leon G. Williams have been admitted as partners to the firm of Jones, Henry & Schoonmaker, formerly known as Jones & Henry, Security Building, Huron at Madison, Toledo 4, Ohio.

Mr. Schoonmaker, a former member of the firm, has returned after serving as City Manager of Toledo for the past nine years. Previous to that he held the position of Chief Engineer of the Division of Water for Toledo.

THE MODERN LAWN MOWER SHARPENER

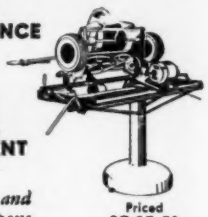
CUTS MAINTENANCE COSTS

•

LOWER CAPITAL INVESTMENT

•

Economically and Quickly Sharpens All Municipal Mowers



Priced $241.50 (less motor)

Sharpens All Reel Type Mowers • Hand, Power or Gang • 10 to 20 Minutes • No Dismantling No Extra Attachments Needed

All reel type mowers, from 5-inch edgers to 36-inch power mowers, are quickly sharpened to extreme ends of both left and right twist reel blades. Handle, wheels, roller and motor remain in place when sharpening is in process. Bed knife is sharpened in same brackets that hold mower in grinding position. No extra attachments required. One lever puts mower or bed knife in grinding position. 100% steel construction. Grinding head rides on five ball bearing races. Small, compact, easy to operate. Sharpens wood chisels, joiner knives and planer blades without extra attachments. Skate Sharpener Attachments available.

1/3-hp. G.E. 60-cycle Motors now available—$21.50 extra.

Send for Free Bulletin No. 258

ORDER NOW • IMMEDIATE DELIVERY

MODERN MFG. CO.

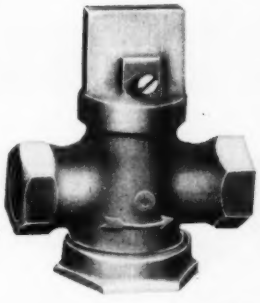
160 N. FAIR OAKS AVE. • PASADENA 1, CALIF.

BEST BY TEST

McDONALD DIAMOND LINE

EST. 1856 McDonald

. . . and the test is time. For 93 years McDonald has been supplying highest quality waterworks goods, designed right and built right. Yes...since 1856 the trade has come to McDonald for service, dependability and lasting satisfaction.



Illustrated is a Diamond Line combined cap and tee handle inverted key curb stop. Plate E3061. Produced from 85-5-5-5 metals with highest mechanical exactness. Combined cap and tee handle design eliminates possibility of sand and extraneous material from entering the plug. Sizes ½, ⅜, ¾, 1, 1¼, 1½ and 2 inch. Also available in stop and waste pattern in all sizes.

IT PAYS TO SPECIFY McDONALD—WRITE FOR INFORMATION AND PRICES

A. Y. McDONALD MFG. CO.

DUBUQUE, IOWA

BRASS GOODS • PUMPS • OIL EQUIPMENT

ETNYRES keep streets clean all over the country!

In every state in the Union Etnyre "Sanitary" Street Flushers are used to keep streets thoroughly cleaned, reduce bacterial count and disease hazard, cool pavements, lay dust.

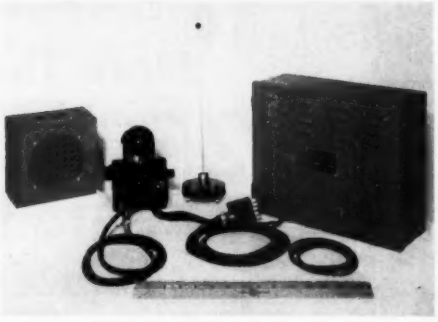
High pressure streams of water clean streets up to 42 feet wide in *one* trip — even under parked cars.

Etnyre Street Flushers are available in four basic styles with front or rear engine drives. Regularly equipped with 3 nozzles, 600 G.P.M. pump, 800 to 3000 gallon tank.

See your dealer or write direct.

E. D. ETNYRE & CO., Oregon, Illinois

New 2-Way Radio



The unit's size can be judged by comparing to the ruler in the foreground.

Comco 275-C 2-way mobile radio is compact and requires only 6 amperes from the battery while standing by and 13 while transmitting. The receiver, transmitter, and power supply, in one unit, are capable of either horizontal or vertical mounting. A typical installation is in the Richmond, Va., Police Department. Five cars and 20 motorcycles are equipped with Comco receivers. Archie R. Smith, the City's Chief Radio Engineer, says: "Comco is desirable in cases where battery drain is a problem." It is manufactured by the Communications Co., Inc., Coral Gables, Miami 34, Fla.

Rubin Appointment By Marlow Pumps

Andre S. Rubin, Jr., has been appointed sales manager of Marlow Pumps, Ridgewood, N. J., to direct sales and sales promotion of the line of construction pumps.

Andre S. Rubin, Jr.

With Marlow since 1942 in the position of assistant to the late A. S. Marlow, Sr., founder of the organization, Mr. Rubin has been active since then in the development of the self-priming centrifugal pumps.

Before joining Marlow, Mr. Rubin was with the marketing division of the Continental Oil Co.

Mort Assumes Connecticut-State Position

Linwood G. Mort, a partner in the firm of Argraves & Mort, consulting engineers, 70 College St., New Haven, Conn., has been appointed Director of the Real Assets Division of the State of Connecticut—the department in charge of the design, supervision of construction, and maintenance of all state buildings and institutions. Mr. Mort has been granted a temporary leave of absence from his firm.

Movie Shows Wetter Water

"Fire-fighting with Wetter Water," a new 20-minute 16-mm sound movie in color by Carbide and Carbon Chemicals Corp., is now available for showings to municipal and volunteer firemen. The movie illustrates how water made wetter by the Corporation's new product, Unox fire-fighting penetrant, knocks out fires. Tests show wetter water on fires in cotton, wallboard, wooden shacks, and various flammable liquids. Interested groups are invited to arrange for showings without charge by writing Carbide and Carbon Chemicals Corporation, Room 328, 30 East 42nd St., New York 17, N. Y.

Teddy Roosevelt was president when we cleaned Washington's mains in 1907
1945 — National begins a 5 year job
Cleaning controlled by 2-way radio
lowers pumping costs
increases volume
increases water pressure
FOR WASHINGTON, D. C.
Before cleaning
After cleaning

Way back in 1907 and again in 1926 National successfully cleaned the water mains of Washington, D. C.

In 1945 a five year program to clean and recondition the entire water main system of Washington was begun and National in conjunction with the Centriline Corporation was again awarded the cleaning contract for 1945, 1946, 1947, 1948 and 1949 — *in short, the entire cleaning job!*

Tests made on those lines already cleaned and centrilined indicate a co-efficient of over 130 as against less than 90 before cleaning, resulting in lower pumping costs, increased volume and higher pressure.

Let us estimate the cost of restoring your lines to at least 95% of their original carrying capacity. Write today.

29

NATIONAL WATER MAIN CLEANING COMPANY

50 Church Street, New York 7, N. Y.

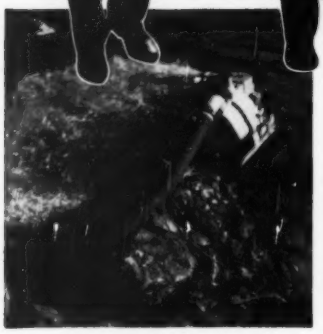
ATLANTA, 1221 Mortgage Guarantee Building • BOSTON, 115 Peterboro Street • CHICAGO, Room 1336, 122 So. Michigan Avenue • HOUSTON, 2518 Grant Street • KANSAS CITY, 421 BMA Building LOS ANGELES, 448 South Hill Street • MEMPHIS, 822 Dermon Building • OMAHA, 3812 Castellar Street • RICHMOND, 210 East Franklin Street • SPRINGFIELD, MO., 844 North Main Street • SALT LAKE CITY, 149-151 W. Second So. Street • SAN FRANCISCO, 681 Market Street • MONTREAL, 2028 Union Ave. • VANCOUVER, B. C., 505 West 1st Ave. • WACO, P. O. Box 887 • WINNIPEG, 576 Wall Street • HAVANA • MAYAGUEZ, PUERTO RICO • BOGOTA • CARACAS • MEXICO CITY

More Than 250,000 HOMELITE UNITS

Pumps · Generators · Chain Saws · Blowers · Paving Breakers

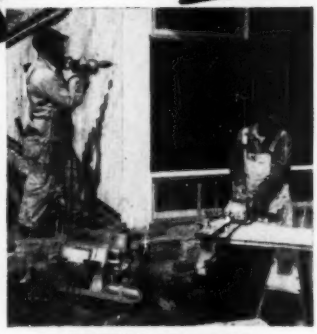
Are on the Job

Everywhere



HOMELITE PUMPS

Everywhere . . . even in the most remote places . . . wherever water has to be pumped out fast *and with the least trouble* you'll find Homelite Carryable Gasoline-Engine-Driven Pumps in action.



HOMELITE GENERATORS

For operating electric tools . . . both high-cycle and standard 110 volt . . . and for operating floodlights, Homelite Carryable Gasoline-Engine-Driven Generators are the ever-ready, ever-dependable favorites everywhere.

HOMELITE CHAIN SAWS

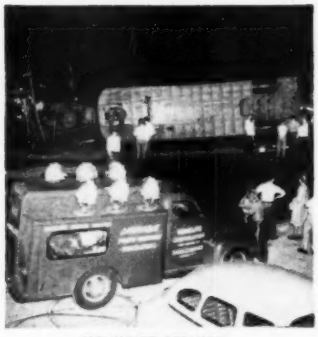
Lightweight, compact, safe and easy to handle, these one-man, high-cycle electric chain saws have super-fast cutting power and are rugged and dependable for all types of cutting on both tree work and construction jobs.

HOMELITE PAVING BREAKERS

More and more the new 84-lb. Homelite Electric Paving Breaker is being enthusiastically received by those who want a fast, efficient breaker that is compact and easy to move.

HOMELITE BLOWERS

Where ejecting smoke or supplying fresh air is a must for safety and efficiency, Homelite Carryable Gasoline-Engine-Driven Blowers are constantly on the job.



HOMELITE SERVICE

In all parts of the country Homelite representatives are ready to demonstrate the advantages of Homelite units and to service most efficiently all Homelite equipment.

Homelite Corporation

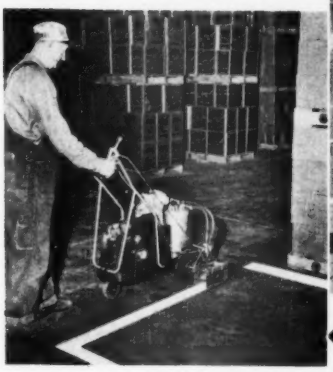
103 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

Manufacturers of
Homelite Carryable Pumps • Generators • Blowers • Chain Saws • Paving Breakers

See how Homelite Equipment can save time, trouble and money for you. Send for descriptive bulletins on any or all of the equipment shown above.

Two New Markrite Models

Markrite Line Master ▶



◀ Markrite Econo Liner

The Universal Mfg. and Sales Co., 8716 Santa Fe Blvd., South Gate, Calif., has added to its series of line-marking equipment the Markrite Line Master and the Markrite Econo-Liner.

The Line Master, self-propelled and with a 5-gallon paint container, reproduces lines from 2 to 6 inches in width and wider lines may be obtained by the addition of an extra spray gun. It has a quick-coupling hose connection for the attachment of a standard paint gun to the pressure pot, making the machine usable as a portable spray rig. The rear caster may be locked, by means of a lever, in a fixed position to insure a straight line, or released so that it will rotate freely and permit easy turning and maneuvering of the machine. The wheel remains on the ground at all times, eliminating the necessity of jockeying the machine when painting a curved line.

A light-duty traffic marker that paints to within ¼-inch of a fixed object, the Econo-Liner has a paint container equipped with a quick-release handle that permits rapid reloading. Special paint guides insure reproduction of sharp lines when painting on floors, wood block, or rough surfaces. This model also may be utilized as a light-duty portable spray paint rig, providing 4 cubic feet of free air per minute.

Personnel Changes at Syntron

The following appointments have been announced by the Syntron Co., 430 Lexington, Homer City, Pa., manufacturer of vibratory material handling equipment and power tools:

E. J. McIlvaine has been given the position of junior salesman in the Vibratory Material Handling Division of the St. Louis, Mo., office.

John C .Mitchell takes over power-tool sales in the Boston, Mass., office.

A. C. Staley, Jr., is a junior salesman in the Vibratory Material Handling Division in the Cleveland, Ohio, office.

F. J. Kirby, Jr., is handling power-tool sales in the Cleveland office.

The Philadelphia branch sales office has been moved from Spring Garden Street to 1018-20 West Lehigh Ave., and the Kansas City, Mo., office has been relocated to the Wirthman Bldg., 31st at Troost Ave.

Night Warning At All HAZARDS—BARRICADES

Big Beam 400-F ELECTRIC FLARE

Night wrecks and accidents caused by hazards and barricades can be averted by warning lights and emergency flares. There are a thousand such uses for the Big Beam Electric Flare with red Fresnel lens. Dependable in any weather, set or hang anywhere in any position, knocking over will not interfere with its operation. A flip of the switch gives the choice of either a steady or a flashing flare. Interchangeable clear Fresnel lens converts it to a regular lantern. As easily serviced as a flashlight.

See your supplier, or write direct

U-C LITE MANUFACTURING CO.

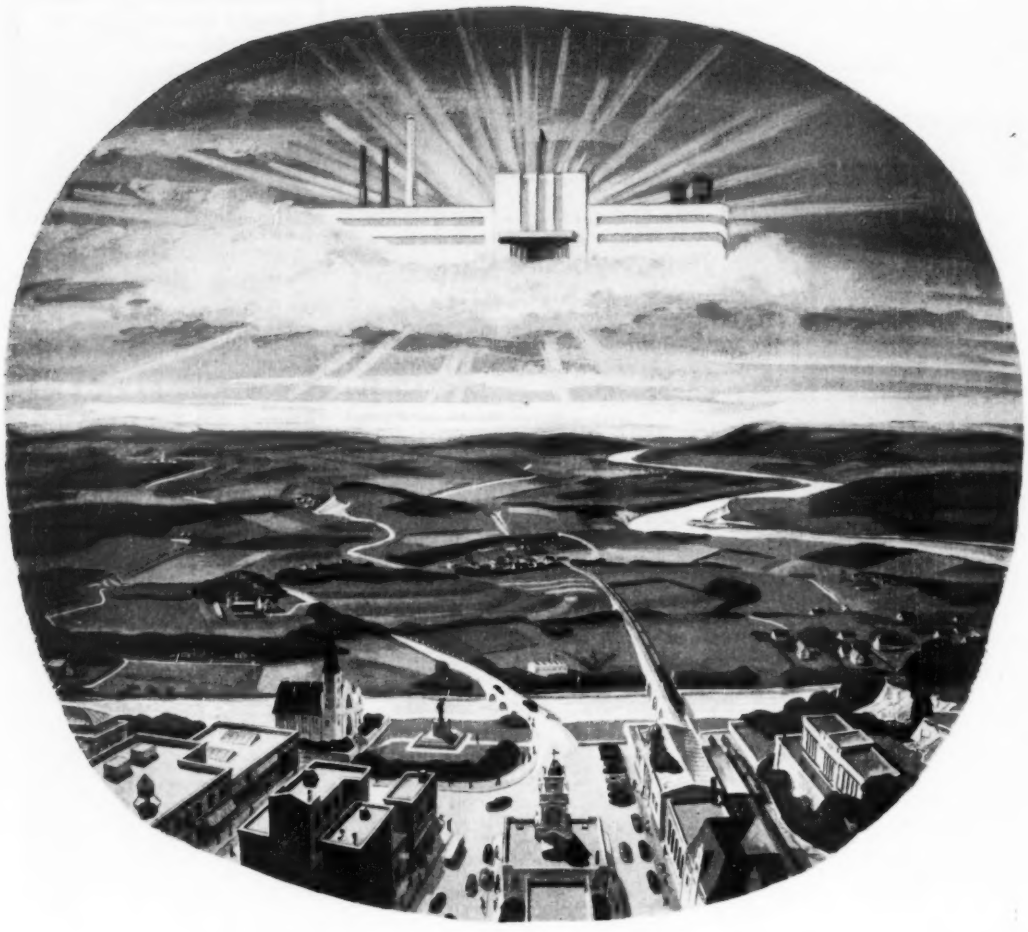
1056 West Hubbard Street, Chicago 22, Ill.

American City PROVIDES SPECIAL PARKING PLACES FOR Cushman MOTOR SCOOTER

• • • Here is a new parking meter installed by the City of San Diego, especially designed for motorcycles and MOTOR SCOOTERS! By using left-over space at corners, these spaces save regular stalls for car parking. Cushman Motor Scooters save municipalities in many other ways, too! Cushman economical operation cuts cost on traffic control, parking meter service and all kinds of inspection.

ASK YOUR DEALER FOR FREE DEMONSTRATION OR WRITE DEPT. AC-29

CUSHMAN MOTOR WORKS, Inc
LINCOLN NEBRASKA USA



New Horizons—'49 style!

This year, new factories will choose cities with abundant soft water. Properly conditioned water means speeded up production and lower operating expenses—advantages modern plants can't afford to miss! Now more than ever, a good municipal water supply is important. It can attract these new industries to *your* town!

As industry benefits, so will the homes in your town. Soft water lightens washday chores and makes clothes last longer. The average family saves money on soap, fuel and plumbing repair bills.

Towns which have soft water look with confidence to a bright future!

If you are faced with a municipal water problem, why not let Permutit* work with you and your consultants? Write for full information on methods of softening water, removing iron, dirt, bad taste and odor etc., to The Permutit Company, Dept. A-3, 330 West 42nd Street, New York 18, New York, or to The Permutit Company of Canada, Ltd., Montreal.

*®

Permutit

WATER CONDITIONING HEADQUARTERS FOR 35 YEARS

Cold Asphalt Mix For Laying In Wet or Dry Weather

Applying Saturock as a complete resurfacing job.

Saturock is a cold asphalt mix for resurfacing or patching that can be laid in either wet or dry weather—and can be stockpiled for future use for your maintenance work.

Consisting of a combination of clean screened Bethany Falls limestone (French coefficient of hardness, approximately 7) and clean washed Kaw River sand, Saturock is available in two types, depending on the thickness to be laid, both of which can be obtained in a rapid or medium set.

One ton of Saturock will cover about 20 square yards of surface one inch thick after compaction, compressing one-third upon rolling.

For surfacing on large areas, compaction should be obtained by using a 3- to 5-ton roller. In patching holes or surfacing small areas, hand or power tamping is satisfactory if thorough compaction is secured.

This medium, which may be used for streets, airport runways, yards, and playgrounds, is manufactured by Carter-Waters Corp., 2440 Pennway, Kansas City 8, Mo.

New District Office For Peerless Pumps

J. W. L. Stone

The Peerless Machinery and Pump Div., Food Chemical Corp., 301 West Avenue 26, Los Angeles 26, Calif., has appointed J. W. L. Stone as manager of a new sales district with headquarters at 4330 Leavenworth St., Omaha, Nebr.

Formerly a field engineer for the Peerless division in the southwest district, Mr. Stone will now supervise the sales of the Peerless horizontal and vertical lines and other pumps manufactured by the company. His territory will include North and South Dakota, Montana, Minnesota, Nebraska, Kansas, Colorado, and portions of Wyoming, Missouri, Wisconsin, and Iowa.

Mathieson Purchases Southern Acid & Sulphur

As a result of negotiations with the Southern Acid & Sulphur Co., Inc., which has plants at Houston, Beaumont, and Port Arthur, Texas.; Shreveport, La., and Little Rock, McKamie, and Macedonia, Ark., The Mathieson Chemical Corp., 60 E. 42nd St., New York, N. Y., is contracting to purchase the business and assets of the company. Southern Acid & Sulphur produces and sells various chemicals and mixed fertilizers.

Mathieson will distribute 265,000 shares of its common stock to the common stockholders of Southern Acid & Sulphur.

You can save money with

PITTCHLOR

water treatment

Here are just two of numerous conditions where Pittchlor will save you money:

1. Where less than 500,000 gallons of water are treated daily.
2. Where the available chlorine demand is not large.

Pittchlor does the same effective job as liquid chlorine—but saves on equipment investment required. Pittchlor is saving money for many water systems around the country.

A high-test calcium hypochlorite containing 70% available chlorine. Granular, free-flowing, non-caking. Packed in 5 lb. cans (9 per case), 33¼ lb. cans (12 per case) and 130 lb. drums.

Write for descriptive literature and any other specific information you want. Pittsburgh Plate Glass Company, Columbia Chemical Division, Fifth and Bellefield, Pittsburgh 13, Pa.

COLUMBIA CHEMICALS

CHICAGO • BOSTON • ST. LOUIS • PITTSBURGH • NEW YORK
CINCINNATI • CLEVELAND • PHILADELPHIA • MINNEAPOLIS
CHARLOTTE • SAN FRANCISCO

PAINT • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

LASTS CENTURIES... EASY TO LAY!

McWane PRECALKED joints are ready to use. Pure lead and redwood wedges are carefully put in the bells at the McWane Plant. No expensive equipment or skilled labor is necessary. Just a man with a hammer and a calking tool are all you need to lay McWane PRECALKED Pipe as fast as the trench is dug!

"Just socket the spigot and calk"

All sizes, 2" thru 12"

McWane PRECALKED Pipe

McWane Cast Iron Pipe Co. **Birmingham, Ala.**

For Fast **REPAIRS** *to* **RUTS & HOLES** *in floors, driveways, . . .* **USE**

STONHARD STONFAST

Simple . . . easy to use . . . just remove from container and tamp into hole or rut. No tie-up of traffic, no delay with STONHARD STONFAST, it is instantly ready to withstand traffic and trucking.

STONHARD COMPANY

Building Maintenance Materials Since 1922

Philadelphia 23, Pa.

Send for **FREE** *Folder*

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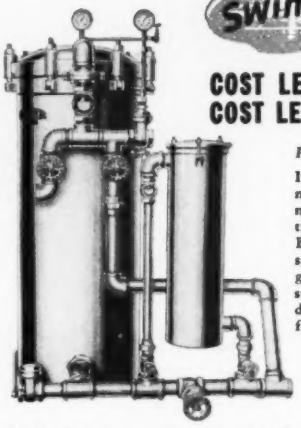
BOWSER DIATOMITE FILTERS

FOR **Swimming Pools**



COST LESS TO INSTALL! COST LESS TO OPERATE!

Planning a swimming pool?

It's a fact—Bowser's most modern method . . . diatomite filtration, costs less than outmoded filters. Bowser yields clearer, safer water. Informed engineers specify Bowser as superior on 10 points of design and operating features.

Get the facts in this Bowser Booklet!

We invite your request for copies of "THE MODERN WAY." If you operate or plan to build a pool, you should read this booklet. We solicit your requests for bids.

BOWSER, INC.—Water Filtration Division

1396 CREIGHTON AVE. — FORT WAYNE 2, INDIANA

Priced Extremely Low For Quick Sale!

WALTER SNOW PLOW

Original Cost Approx. $19,000

Attention, municipalities! Here's the low-cost, efficient way to handle snow-clearance problems. Has the traction, power and speed for removal of heavy drifts. 1945 model FCL in excellent condition. Looks and operates like new.

No. Cylinders: 6
Wt. Chassis: 11,000 lbs.
H.P. 125 actual. SAE 51
Power: Gas
Capacity: 8 tons
Tires: Pneumatic 1000/24, 12 ply

Wheelbase: 162"
Axles: 2
Wheels: 6
Seating Cap.: 3
Length: 251"
Height: 102"
Width: 96"

WRITE — WIRE OR PHONE NOW!

CLEVELAND WRECKING CO.

702 Chester Pike, Sharon Hill, Pa. **SAratoga 9-2700**

The "Quinn Standard"

FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 30 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms and Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

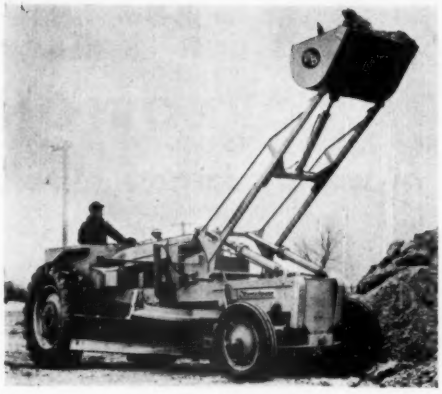
Quinn Heavy Duty Pipe Forms

For making pipe by hand methods by either the wet or semi dry processes. Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe—any length.

WRITE TODAY

Complete information, prices and estimates sent on request. Also manufacturers of Quinn Concrete Pipe Machines.

QUINN WIRE & IRON WORKS 1623 12TH ST. BOONE, IA.



Front-End Loader For Graders, Maintainers

With operation of the loader independent of the grader blade, scarifier, or leaning wheels, the new front-end loader made by the Meili-Blumberg Corp., Box 110, New Holstein, Wis., is equipped with a standard ½-yard bucket for handling dirt, sand, gravel, and materials; a 1-yard bucket is available for handling snow and similar light bulky materials.

When in dumping position, the bucket has a clearance of 8½ feet. A single lever at the operator's seat provides complete remote control of the digging pitch, and raising, leveling, dumping, shaking, and lowering of the bucket.

The loader is available as a separate unit or already attached to the M-B power grader or Model 30 Maintainer.

New Office for Nordberg

The Heavy Machinery Division of the Nordberg Mfg. Co., Milwaukee 7, Wis., has opened a combination sales and service office at 527 City Park Ave., New Orleans, La., with W. J. Moran as district manager.

Electrical Equipment Now Available

Increased manufacturing capacity and technical improvements on the production line are sharply reducing the abnormal post-war backlog of orders for most types of electrical equipment, according to Tom Fort, manager of central-station sales for the Westinghouse Electric Corp., East Pittsburgh, Pa. At the beginning of 1947, the motor manufacturing industry in this country had a backlog of 2,700,000 electric motors of the ordinary factory sizes. At the beginning of 1949 this backlog had been cut to 300,000 motors. Delivery dates on large motors for power-house auxiliary drives, for example, have been reduced from 20 months two years ago, to 11 months.

Two years ago, distribution-transformer shipments were anywhere from 10 months to two years. Today many standard ratings are available for stock shipment. Distribution - transformer production is more than 10 times what it was during the middle of the war and far beyond anything ever expected.

Current switchgear deliveries should certainly pose no problem to those planning expansion programs. At Westinghouse, where switchgear manufacturing facilities have been increased by more than 50%, the problem is to keep these facilities loaded. In the street-lighting field, Mr. Fort said, almost all luminaires, reflectors, and cable are available either from stock or with delivery time up to eight weeks.

CRACK FILLER

No. 46A

TARCO

Pouring Pots, Buckets, Dippers

Various shapes and sizes. For any application of hot TAR, ASPHALT, PITCH or RUBBER-ASPHALT Compounds. Quality built, tested, all-welded. Insulated or uninsulated. Pamphlet?

Ask Us or Your Nearest Dealer

TARRANT MFG. CO.
East Ave., Saratoga Springs, N. Y.

Another "Ace"

M-SCOPE
ELECTRONIC BOX LOCATOR

Locates hidden service boxes, etc., as fast as a man can walk. . . . It's faster — and more accurate — than the old "dip-needle" methods.

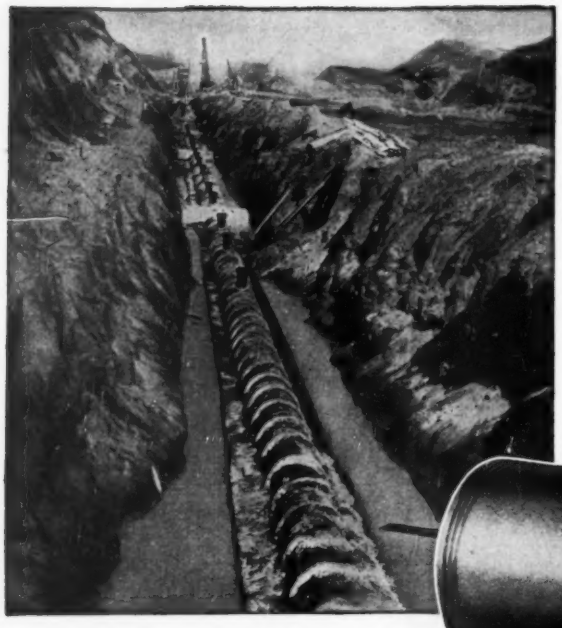
Free Illustrated Booklet

Fisher Research Laboratory, Inc.
PALO ALTO • CALIFORNIA

VITRIFIED CLAY PIPE

RESISTS CORROSION

. . . *in one of world's largest sewers*



Kissena Corridor Park Sewer, part of New York City's new $10 million sewer project, is constructed of 18-inch Vitrified Clay Pipe. The main tunnels of this huge sewer are larger than the Holland Tunnel! They're designed to service 75,000 to 100,000 badly needed homes. Construction is by the City of New York, President of the Borough of Queens, Bureau of Engineering, Division of Sewer Construction.

NO FOREIGN MATERIAL IN CLAY PIPE

Vitrified Clay Pipe is not a compound or mixture of materials loosely held together by a chemically bonded agent. Clay in its natural stage is fused at high temperatures by means of an exclusive process called Vitrification. Clay Pipe is a permanent, *heat-bonded* material that will serve mankind for centuries without wearing out. Vitrification is the reason why Clay Pipe is acid-proof, rust-proof, does not crumble and won't disintegrate.

If you need specific information on a Clay Pipe question, write the details to the office nearest you.

NATIONAL CLAY PIPE MANUFACTURERS, INC.

100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
522 First National Bank Bldg., Atlanta 3, Ga.
703 Ninth and Hill Bldg., Los Angeles 15, Calif.
C-294 1105 Huntington Bank Bldg., Columbus 15, Ohio

Vitrified
CLAY
CLAY PIPE NEVER WEARS OUT!
PIPE

16-Ton Loads Picked Up In Seconds

The improved Heiliner, made by the Heil Co., Milwaukee 1, Wis., is cutting through a new roadway while undergoing field tests. Horsepower of the diesel power plant in the unit has been increased to 200 and has top speeds of 25 and 30 mph. Over-steering is prevented by a fifth-wheel spindle equipped with positive mechanical stops to enable it to pick up its 16-ton loads and speeding away without danger of nosing, snaking, or jack-knifing.

Bower New Chief Engineer At Waukesha Motor Co.

The Waukesha Motor Co., Waukesha, Wis., has appointed Lloyd L. Bower as its chief engineer to succeed James B. Fisher, who has retired.

Lloyd L. Bower

A member of the company's engineering department for more than 20 years, Mr. Bower had previously held positions as layout draftsman and transmission specialist for the Garford Truck Co. and assistant to the chief engineer of the Transport Truck Co.

Seymour Promoted By Atlas Mineral

Raymond B. Seymour, formerly chief chemist for the Atlas Mineral Products Co., 121 Norman St., Mertztown, Pa., has been promoted to the position of executive vice-president and general manager.

R. B. Seymour

Previously associated with the development of several of the corrosion - resistant cements, linings, and protective coatings now manufactured by the company, his position will include direction of the research program of these products.

Dr. Seymour has also been associated with the Goodyear Tire and Rubber Co., the Monsanto Chemical Co., the Industrial Research Institute of the University of Chattanooga, and the Special Products Research section of Johnson & Johnson.

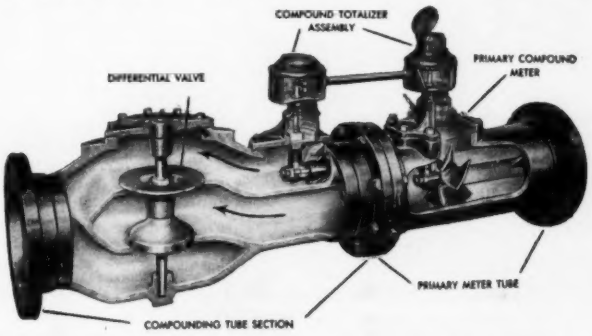
New Home for Hurstco

Hurstco, Inc, 117 E. Colorado Blvd., Pasadena 1, Calif., has been changed to Concrete Sawing Equipment, Inc., 265 North Vinedo Ave., Pasadena 8. The company manufacturers Concut, Jr., concrete-sawing units.

Good-Posture Chairs Mean More Valuable Employes

The Sikes Co., Inc., 20 Churchill St., Buffalo 7, N. Y., manufactures a complete line of chairs to conform with any period in which municipal offices are decorated. But more important than the aesthetic advantages to the company's line is the design of the chairs themselves, particularly those for office personnel. The chairs are constructed to provide the maximum of posture comfort in work as well as relaxed positions. Studies have proven that the no-fatigue feature of a chair is important in the ratio of actual work accomplished.

SPARLING MAIN-LINE METERS



Differential valve cracks at about one pound per square inch back pressure from the smaller meter. The smaller meter measures all flows below the minimum accurate range of the larger meter. Both meters drive through rachet clutches to a common totalizer, which thus operates with the faster turning meter.

COMPOUNDS for Main-Lines up to 36-inch

The standard 6-inch Sparling Meter accurately registers flows from 90 gpm to over 900 gpm. To read flows as low as 15 gpm on a 6-inch main, install the Sparling COMPOUND shown above.

Loss of head at the *high* flows is only 3 pounds psi. There is only one totalizer to read on the Sparling Compound, and instruments and controls can be added to suit your needs.

Sizes 6-inch to 36-inch with flanged, bell or spigot ends.

Quotations and Bulletin 310 come at your request.

J. W. SPARLING *Manufacturers of* WATER MEASURING EQUIPMENT

LOS ANGELES 54....Box 3277 Terminal Annex
CHICAGO 8.....1500 South Western Ave.
BOSTON 8.....6 Beacon Street
622 Broadway.....CINCINNATI 2
101 Park Avenue.....NEW YORK 17
1932 First Avenue.....SEATTLE 1

HIGHWAYS, STREETS AND ROADS NEED THE LITTLEFORD 84-HD KETTLE

TIME SAVER

84-HD Kettle using Hand Spray Attachment for Patch Work.

COST SAVER

When the Littleford 84-HD Kettle is on a road maintenance job its faster heating, efficiency in operation and patented features make it a Time Saver, Cost Saver and Road Saver. No other Kettle has ever been designed with such painstaking effort as the 84-HD. This Littleford unit has patented features such as Double Heat Circulation System, which utilizes the entire heat of the Burner, and Screened Reservoir, which assures a continuous flow of hot materials even when cold materials are added during the heating. These features are the reason why the 84-HD has repaired more Roads, Streets and Highways than any other kettle on the market. To make the 84-HD even more efficient, a Hand Spray or Motor Spray Attachment can be added to this Kettle.

ROAD SAVER

For further details see your nearest Littleford Equipment Distributor.

MANUFACTURERS OF

	"Spray Master" Pressure Distributors	
"Tankar" Steam Heaters	Highway Brooms	Asphalt Supply Tanks
"Kwik-Melter" Rooters Kettles	Tool Heaters	No. 101 Ubbity Spray Tanks
Trail-O-Rollers	Trail-O-Distributors	84-HD Asphalt Kettles

LB LITTLEFORD

BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE · 1900

LITTLEFORD BROS., INC.
500 E. Pearl St., Cincinnati 2, Ohio

ANTHRAFILT

(Reg. U. S. Pat. Off.)

A Filter Medium For All Purposes

Has outstanding advantages over sand and quartz media:

1. Length of filter runs doubled
2. Only about one-half as much wash water required
3. Less coating, caking or balling with mud, lime, iron or manganese
4. Filters out of service less because of shorter wash cycle
5. Better removal of bacteria, micro-organic matter, taste and odor
6. Increased filter output with better quality effluent
7. Not just the top portion, but the entire bed, aids in filtering
8. Can be used in all types of filters using a filter medium
9. A perfect supporting medium for synthetic resins
10. An ideal filter medium for industrial acid and alkaline solutions
11. Decidedly advantageous for removal of fibrous material as found in swimming pool filters

Additional information, recommendations and quotations furnished upon request by

PALMER FILTER EQUIPMENT COMPANY
822 E. 8th St. Erie, Pa.
Engineers and Sales Agents

REPRESENTING —

ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

COLE

GAS STORAGE TANKS

● Whether you want conventional high-pressure units or something *special*—send us your inquiries. COLE can build you the kind of high-pressure tanks or vessels you require—any size, any shape, any metal. Our experience (of almost a century) in the design and fabrication of metal tanks may be of help to you.

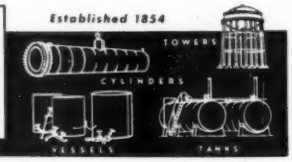
■

Send us your inquiries for tanks of all kinds. Write for CATALOG—"Tank Talk".

■

R. D. COLE
MANUFACTURING CO.
NEWNAN, GA.

Established 1854



Oakridge Takes No Chances

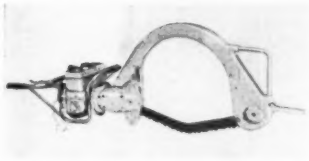
In Oakridge, Tenn., home of the Oakridge Atomic Energy plant, this new FWD 750-gpm pumper truck offers additional fire protection to a community which, in 1947, had the nation's outstanding fire-protection record. The fire engine was built by the Four Wheel Drive Auto Company of Clintonville, Wis.

Farquhar to Manufacture Mist Sprayers

The A. B. Farquhar Co., York, Pa., is starting production on the Farquhar-Iron Age mist sprayer, successor to the Orchardaire which had formerly been manufactured by the Greenfield Sprayer Co. of Greenfield, Mass. George E. Tirrell, designer and manufacturer of the original sprayer, has joined, with his latest sprayer design, Farquhar's research and sales staff. With this mechanism, Farquhar is entering the mist-sprayer-equipment field. The company will continue to make its Iron Age line of farm equipment.

G. E. Tirrell

New Bow Saw From McCulloch Motors



A new 20-inch bow saw that is designed to cut timber in any position without pinching, prying, or wedging has been announced by McCulloch Motors Corp., 6101 W. Century Blvd., Dept. MM, Los Angeles 45, Calif. With power supplied by the same special 5-hp McCulloch unit used with the company's other chain-saw models, the bow can be interchanged with any length of straight blade and chain up to 5 feet.

The saw has 360-degree swiveling, automatic clutch, automatic control of chain tension, kick-proof starter, special fast-starting magneto, operation of the engine in any position, and the Rip-Cross chain (which never requires setting and which is easily sharpened by hand filing without removing the chain from the saw).

Ferric Sulphate For Sewage Treatment

The Stauffer Chemical Co., 636 California St., San Francisco, Calif., is now offering to western consumers a sewage-treatment grade of ferric sulphate which may be used as a coagulant in treatment plants to build the stable-type floc common to iron salts—an item of particular importance to municipalities facing tightening regulations governing the pollution of streams, bays, and underground waters.

This substance is shipped in paper bags and is free from corrosion in operations. Its widespread use in the west has been retarded by the high freight rates on the material from the east—a condition that is eliminated with its production at the company's Richmond, Calif., plant.

How to Cut Line Marking Costs Up to 75%

The MARK-RITE is ideal where lineal footage to be covered does not warrant bigger machines. Simple to operate, the MARK-RITE requires only five minutes to set up, five minutes to clean; no straining of paint; one man, unskilled, to operate; aluminum construction; gravity feed; brush is a special paint spreader type, available in interchangeable sizes of 2, 3, or 4-inch widths; fully guaranteed.

Complete information on request

UNIVERSAL MFG. & SALES CO.

8716 S. Santa Fe Ave., South Gate, Calif.

Why postpone needed construction?

These permanent, low-cost airport buildings are available now!

Luria now offers a complete line of permanent, heavy steel-frame structures that cost little or no more than light-weight temporary buildings. What's more, they can easily be adapted to meet your precise requirements, for anything from a hangar to an administration building. And they are available now, ready for prompt delivery. Write today for our new 20-page catalog on the complete Luria line.

FEATURES

- Clear door openings of up to 200 feet
- Eave heights of 12 to 20 feet or more
- Lengths as desired in increments of 20 feet
- Wide choice of collateral materials, lean-to's and other optional features

Standard Buildings by LURIA

LURIA ENGINEERING CORPORATION, Dept. Y14
500 Fifth Avenue, New York 18, N.Y.

CONCRETE PAVEMENT
means lower street lighting costs

IN a study of street lighting costs based on an actual municipal rate, it was found that it would cost $483 per year to provide adequate lighting* for 1,000 feet of a dark-surface street 40 feet wide. For light-colored concrete, which has the highest light reflectance of any pavement, the cost would be only $283.80, a saving of $199.20, or more than 40 per cent.

Over a 25-year period this saving in street lighting costs would amount to about $5,000 for every 1,000 feet, or more than $26,000 for every mile of 40-foot pavement.

Reduced lighting costs are only one of the many economies of concrete pavement for streets and airports. Concrete's first cost is usually less than any other pavement of equal load-carrying capacity. It costs far less to maintain. It renders long years of uninterrupted service. It saves on gas, tires and car repairs. It is truly the ***low-annual-cost*** pavement.

*Lighting recommendations are based on light reflectance as determined by the Committee on Street and Highway Lighting of the Illuminating Engineering Society. The Committee made a study of the subject in an effort to reduce traffic fatalities, which are three times greater at night than during the day. Using concrete's light reflectance of 20 per cent as a base, the Committee recommends proportionate increases in illumination for other pavements—up to 100 per cent more for dark-colored pavements with a light reflectance of only 5 per cent.

PORTLAND CEMENT ASSOCIATION

DEPT. A3-4, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

Parsons Demonstrates Model 80 Trenchmobile

This is the Model 80 Trenchmobile that was demonstrated by the Parsons Co., Newton, Iowa, in a tour that included California, Arizona, New Mexico, Texas, Oklahoma, and Missouri. The machine is designed to do small off-street trenching operations formerly done by hand labor. It travels at speeds up to 18½ mph, or can be towed or loaded into a truck or on a trailer. It digs to a depth of 48 inches at a width of 5 to 7½ inches, and does the job at speeds ranging from 2.16 to 13.22 fpm.

Rear-View Mirror Has Vertical Swing

The Grote Mfg. Co., Grote Square, Bellevue, Ky., is making a rearview mirror designed to make truck operation more efficient. It can be used on such equipment as refuse-collection trucks and general repair and service trucks.

Featuring the pre-set stop that can be lifted to clear any obstruction and then return to its original position without further adjustment — saving time and mirror replacement costs — the mirror has a lock nut that prevents the shaft, adjustable from 19 to 29 inches, from twisting or slipping and stops chatter and vibration.

Mr. City Official:—

Have you considered "GUNITE" for repairs to your dams and waterworks structures?

Here is a high quality concrete, pneumatically applied, quickly and economically, by experienced workmen, to solve the problem of disintegration.

Many agencies have specified and used "GUNITE" for repairs such as shown here, as well as for sewage disposal plants, water-tanks, bridges, stadia, etc.

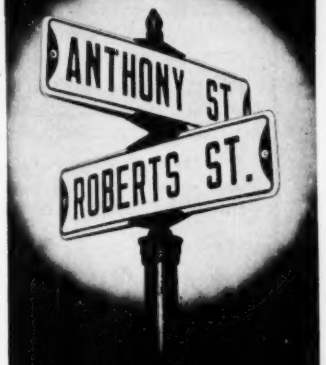
We welcome inquiries from those having concrete restoration problems of any kind.

Send for our 48 page "GUNITE" Bulletin.

PRESSURE CONCRETE COMPANY "GUNITE" CONTRACTORS AND ENGINEERS
193 EMMET ST. NEWARK 5, N. J. • 33 N. LA SALLE ST. CHICAGO 2, ILL. • S. COURT ST., FLORENCE, ALA.

Beautiful, Legible, Low-Priced

STREET NAME SIGNS



WRITE FOR CATALOG

Cataphote Corporation

TOLEDO, OHIO

BAKER
HD-5
BULLDOZER

SMALL BUT PLENTY *TOUGH*

Here's a rugged little bulldozing team that can really turn out a tremendous amount of work on any job. The HD-5 and Baker Bulldozer is small and compact, easily maneuvered, easily transported, easily operated. It's fast on its tracks, but packs a powerful punch when the going gets tough.

Direct hydraulic lift on the blade means faster action, more accurate control, and positive down pressure — for easier penetration in tough digging.

Simplified tractor mounting maintains tractor balance — saves wear and tear on the tractor, converts full tractor power into push on the blade.

There's no better bulldozing team in the 40 HP class. Try one on your next job and see the difference — compare performance, costs, output and you'll be way ahead with Baker. See your Baker Allis-Chalmers dealer today for delivery schedules.

BAKER MFG. CO. SPRINGFIELD, ILL.

BAKER

BULLDOZERS • GRADE BUILDERS • SNOW-PLOWS

Koehring Personnel Changes

From left to right:
E. O. Martinson
E. W. Maas
E. A. Brugger

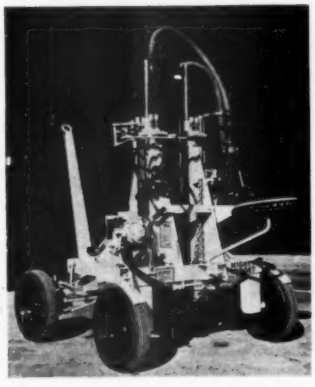
The Koehring Co., Milwaukee 10, Wis., has named E. A. Brugger vice-president in charge of production; E. O. Martinson, chief engineer; E. W. Maas, vice-president and general manager of the Kwik-Mix Co., a Koehring subsidiary.

Arnesen Added to Sales Staff Of Worthington-Gamon

Fred A. Arnesen has been engaged by the Worthington-Gamon Meter Co., Newark, N. J., to augment its sales staff; he will make his headquarters at Oklahoma City, representing the company in western Oklahoma, northern sections of Texas and Louisiana, and Arkansas.

Fred A. Arnesen

New Features on Midget Pavement Breaker



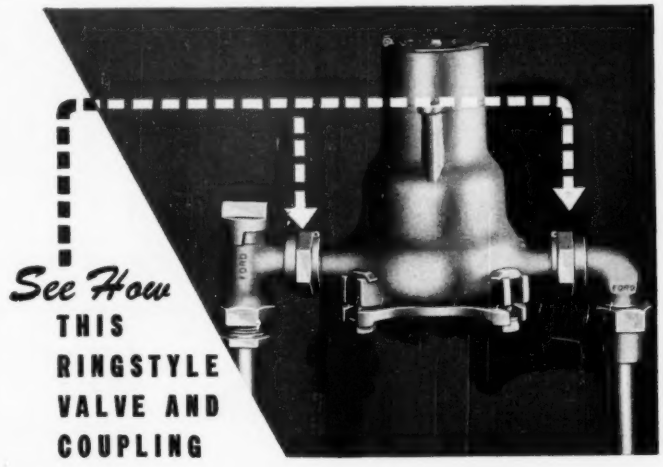
Greater ease of handling, and gains in yardage of concrete broken per day are the results of the new features incorporated in the Mighty Midget pavement breaker, manufactured by the Rapid Pavement Breaker Corp., 2751 E. 11th St., Los Angeles, Calif.

All controls are within easy reach of the operator's seat, placed directly behind the machine so that the operator can see at all times exactly where and how the hammer contacts the pavement. A conventional steering wheel has been added that fits alongside the machine and can be easily reached. Worm drive holds the front wheel steady under difficult conditions while higher wheels allow the machine to run through broken concrete and remain on a straight course without sinking into the concrete.

Good Airport Turf

One of the most important considerations in the acquisition of good airport turf is the purchase of the seeds. This, maintains the Albert Dickinson Co., Chicago, Ill., publishers of a booklet on *Establishing and Maintaining Airport Turf*, is one of the least expensive items in the entire program—and should not be selected as the focus for economies. There is a seed that is particularly good for each type of weather and soil condition. Suppliers can give recommendations.

In the preparation of the soil, try not to remove topsoil in the grading process. Be liberal in the utilization of fertilizer and sub-surface drainage.



CUT Installation Time!

Any water works man can see in a flash how Ford Ringstyle valves and couplings save pipe-fittings and installation time.

The meter nut is attached to the valve and the coupling by Ford's ingenious Ringstyle construction .... a sturdy bronze pin is driven through the nut and forms a ring behind the flange.

These fittings are described in our new catalog No. 50—it is FREE.

THE FORD METER BOX COMPANY, INC.

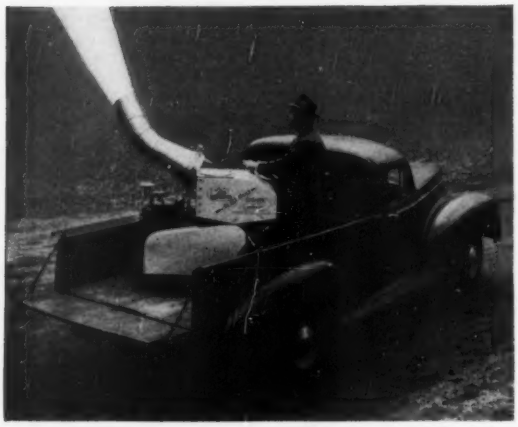
FOR BETTER WATER SERVICES

FORD

Wabash, Indiana

Whatever Your Spraying Problems . . .

A "LAWRENCE" AERO-MIST SPRAYER IS THE ANSWER!



NEW L-40 Model FILLS Urgent Need For Light, Powerful Mist Sprayer

In municipalities where the spraying program is not large enough for the L-80 heavy duty mist sprayer, the light, compact and powerful LAWRENCE L-40 AERO-MIST SPRAYER handles the entire spraying program efficiently, economically, and speedily. Tree, park, and health departments find the L-40 invaluable in helping control leaf eating insects and fungus diseases — and to protect public health through the control of flies and mosquitoes. The 700 pound L-40 can be operated from the back of a light truck or trailer, so *all* hard-to-get-at areas can be sprayed . . . and the operator can swing the sprayer in a complete circle—aiming the directional air nozzle in any direction.

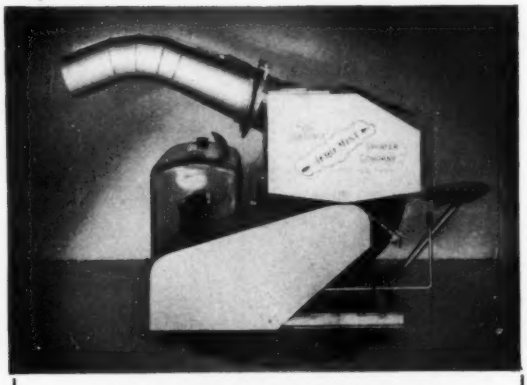
There's a "LAWRENCE" for the Smallest and Largest Mist Spraying Programs

The NEW Improved Heavy Duty L-80 Aero-Mist Sprayer for Large-Scale Mist Spraying

For large-scale mist-spraying programs to combat dangerous and destructive pests, the L-80 is tops for efficiency—economy—convenience. Not a drop of atomized mist is wasted—and even adverse weather conditions do not materially reduce the effectiveness of insecticides applied with the L-80 LAWRENCE AERO-MIST SPRAYER. One-man finger tip directional controls direct the sprayer to *ANY DIRECTION*—saves time and labor.

Sturdy, efficient, built to last for years—the L-80 is backed up by years of exhaustive research, testing and engineering. *It's the mist sprayer that revolutionized pest control.*

WRITE, WIRE OR PHONE COLLECT FOR COMPLETE SURPRISING DETAILS TODAY



ALL THESE IMPROVEMENTS

- ★ NEW 53 gallon V bottom supply tank. Easier to mix formulation and assures excellent agitation.
- ★ NEW larger capacity pump to work in conjunction with tank for better agitation. Pump handles all types of spray materials.
- ★ NEW quick shut off valve for instant spray control.
- ★ NEW steel base reduces weight of sprayer 200 pounds.
- ★ NEW improved braking system.

THE LAWRENCE AERO-MIST SPRAYER CO.

58B FEDERAL STREET, GREENFIELD, MASSACHUSETTS

Sales Division Changes In Fairbanks-Morse

O. O. Lewis

H. L. Hilleary

L. A. Weom

D. T. Johnstone

The following promotions and changes have been announced for the Sales Division of Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

O. O. Lewis, until recently assistant sales manager, has been promoted to sales manager.

Harry L. Hilleary, manager of the St. Louis, Mo., branch for the past 17 years, is being transferred to the company's headquarters office in Chicago with the new position of assistant sales manager. His previous position has been taken over by L. A .Weom, formerly manager of the pump division. T. Johnstone succeeds Mr. Weom.

New Ambulance Body For Municipal Departments

Designed for mounting on any ¾- to 1-ton face-cowl short-wheel-base chassis, the new ambulance being made by the Oltman-O'Neill Co., 23500 Sherwood Ave., Centerline, Mich., accommodates two cot patients and two attendants.

A steel partition with jackknife doors separates the driver's and the patients' compartments. The rear attendant's seat is secured to a steel base which is used for stowing blanket, sheets, and pillows. There is also a large steel floor cabinet for medicine, splints, and other first-aid materials, and a shelf for two thermos bottles. An electric fan and roof ventilator are standard equipment. On the left are two recessed compartments holding canvas stretchers, and a spare tire is carried in a well at the right and back of the driver's seat.

Of particular interest is the relatively low price, which makes it entirely practicable for municipal departments that maintain hospital facilities.

Sales Appointments By American Coach & Body

The American Coach & Body Co., 9503 Woodland Ave., Cleveland 4, Ohio, manufacturers of utility truck bodies, aerial revolving ladders, and tower lifts, has appointed Paul V. Dimmick to succeed Deming Bronson, who has resigned, as central division sales manager. With him as his assistant at the Cleveland headquarters will be Arthur C. Frank.

Paul V. Dimmick

Arthur C. Frank

Healthful Recreation Makes Better . . .

Give the boys and girls and grownups too—nighttime play spots — well-lit beaches and park playgrounds and you'll have less delinquency in your community.

Revere ELECTRIC MFG. CO. CHICAGO, ILL.

FLOODLIGHTING

is designed for all types of nighttime play and sports activities—

Write for our SPORTS LIGHTING CATALOG—REVERE Floodlights light the Nation's Playing Fields from villages to metropolises.

REVERE ELECTRIC MFG. CO.

6015 Broadway Chicago 40, Ill.

3 way dependability

EDDY HYDRANTS

Since 1848 EDDY for Long Service

1. **IN CASE OF FIRE**—dependable, smooth operation . . . clear, large waterways . . . insure plenty of water. Hydrants open fast and easily *with* the pressure . . . and close without water hammer.
2. **IN CASE OF ACCIDENT**—stem held in place below main valve means no water loss due to a bent stem. One man can easily remove all operating mechanism for inspection or repairs.
3. **IN CASE OF LOW TEMPERATURES**—Eddy's positive drip action automatically drains hydrant barrel of all water when hydrant is closed . . . safeguards hydrant against freeze-ups.

EDDY
VALVE COMPANY
WATERFORD NEW YORK

A subsidiary of James B. Clow & Sons

TRAIL BLAZERS
1510-1949

For the Indian brave, a bent sapling was *"trail sign"* . . . a message that kept him on course, ready for what lay ahead. Today Miro-Flex, America's finest complete sign line, gives quick, dependable *"trail sign"* for the nation's motorists. Plain, embossed, reflectorized with glass or Stimsonite buttons, or Scotchlite*. Standard or specials. *Write for free catalog.*

*TMR-MMCO

3-49

MANUFACTURED BY

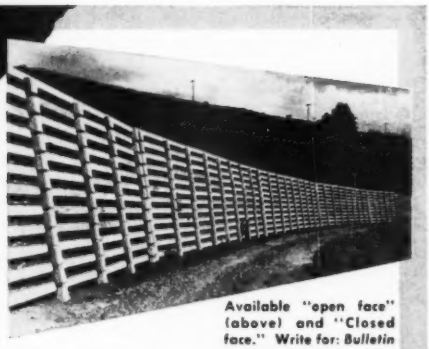
MIRO-FLEX CO., INC.

1824 EAST SECOND STREET . . WICHITA, KANSAS

---

if this wall had ears . . .

. . . it would hear some very nice things about itself!



Available "open face" (above) and "Closed face." Write for: *Bulletin C-49.*

Universal Concrete Cribbing Walls

. . . are praised by both builders and those who foot the bills. They are quickly placed with minimum waste effort—no extensive digging, no footers, no special provision for drainage. Pre-cast units are easily laid up by unskilled labor. Back filling proceeds as the wall rises. Built in any weather, Universal walls can be any height, straight or curved. Last forever yet complete salvage if removed.

Universal
CONCRETE PIPE CO.

GENERAL OFFICES: 997 S. HIGH ST., COLUMBUS 15, OHIO

Decatur, Ala.
Dothan, Ala.
Atlanta, Ga.
Kenvil, N. J.
New York City, N. Y.
Port Washington, N. Y.
Syracuse, N. Y.
Rochester, N. Y.
Binghamton, N. Y.
Columbus, O.
Zanesville, O.
Norristown, Pa.
Pittsburgh, Pa.
Nashville, Tenn.
Clarksburg, W. Va.
New Martinsville, W. Va.
Wheeling, W. Va.

UNIVERSAL CONCRETE PIPE

. . . is manufactured on famous Universal machines, that true-tamp every cubic inch of concrete at the incredible rate of 680 times a minute. The result is dense, strong, uniform pipe that meets or exceeds ASTM specifications. Get the extra quality of Universal pipe—any size, any quality.

Paving Breaker Operated by Electricity

The new paving breaker manufactured by the Homelite Corp., 101 Riverdale Ave., Port Chester, N. Y., is operated by electricity rather than by compressed air. The 84-pound high-cycle breaker with its generator is compact enough to fit in the trunk of a car and be put into operation by one man.

The 129-pound dual-voltage gasoline-engine-driven generator that operates the breaker can be used for operating other types of high-cycle tools as well as standard 110-volt tools and floodlights.

Unaffected by dust or abrasive particles, the motor has no brushes or commutator to wear out and there is no electrical connection between the rotor and the stator. A floating cylinder prevents the transmission of shock

A smooth, flat-sided back rides comfortably on the operator's leg.

to the driving mechanism, and a positive-plunger-pump lubricator has an automatic switch that stops the breaker when its oil reservoir is empty.

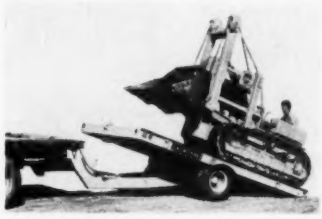
Two New Offices For Chain Belt

Clarence R. Studer **David B. Hill**

The Chain Belt Co. of Milwaukee, Wis., has opened its St. Louis, Mo., office at 8001 Clayton Road, under the direction of Clarence R. Studer, and a Jacksonville, Fla., branch at 340 W. Church St., to be supervised by David B. Hill.

Inexpensive Tilting Trailers

Designed to speed job-to-job hauling of tractors, mixers, compressors, and similar bulky loads, the two new tilting trailers announced by La Crosse Trailer Corp., La Crosse, Wis., can be loaded or unloaded by one man without skids or blocks and can be used behind any standard ½- to 1-ton truck equipped with a pintle hook.



The TSA-2 can be used also with stakes or box sides for hauling dirt or aggregate.

The TSA-2 has an 8- to 10-ton capacity with an 8- by 15½-foot platform riding on a single axle with two wheels. A double-acting hydraulic cylinder cushions the trailer platform when it is tilted. The one-piece axle and drawbar are removable, permitting its use as a pole trailer.

The lower-priced model, LTA-4, has a 6- to 8-ton capacity, 8½-by-10 1/3-foot platform, tandem axle with four wheels. The entire trailer tilts for loading with the removal of the pin from the hinged drawbar; the weight of the load brings the trailer down into position, after which the pin is inserted and the trailer is ready to move.

● Hardie has supplied many custom built fleets of this popular motor truck mounted model with and without truck power take off.

FOR years the Hardie organization has specialized in designing and building the great sprayers required for quick, economical, thorough spraying of tall trees. Hardie pumps provide capacities up to 80 G.P.M. and pressures up to 1000 P.S.I. Availability in a wide range of standard models, any of which is readily adapted to all other spraying requirements, gives the Hardie exceptional investment value as well as a wide range of utility. Write for the catalog showing sizes and styles of Hardie sprayers for every requirement in tree care and public works.

THE HARDIE MFG. COMPANY

Los Angeles 11, Calif. • Hudson, Mich. • Portland 9, Oregon

Export Dept., Detroit 26, Mich.

Canadian Office, Clarence W. Lewis & Son Ltd.—Grimsby, Ontario

SAN DIEGO

organizes Traffic Complaint Records with ½ the work

Traffic Officials cite savings achieved through Kardex Control System

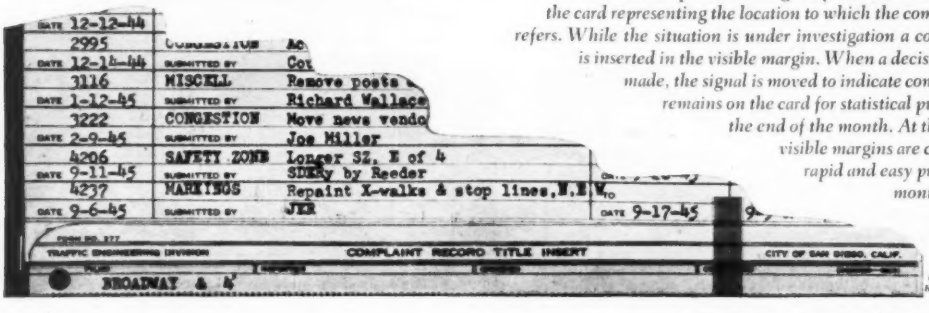
Kardex Visible Control of Traffic Complaints and Suggestions, formerly handled in a vertical card file by the San Diego Traffic Engineering Department, has meant spectacular savings in the time needed to operate the record *plus* greatly improved service in answering telephone inquiries, and in other related functions. Record review, a tedious, time-consuming job with the old "blind" file, is now accomplished by merely glancing down the visible margins of the Kardex record and noting locations of signals. Thus, a rapid survey of current traffic conditions is provided, and decisions are made instantly as to where to direct corrective action.

In the words of San Diego's Chief Traffic Engineer: *"This work-saving record is a true economy and a real necessity to the operation of the Traffic Engineering Dept."*

Send for the issue of *Systems for Government Administrators* which carries a detailed, illustrated description of San Diego's outstandingly successful Traffic Complaint Control record. Anyone holding an executive position in public administration is eligible to receive *Systems for Government Administrators* free of charge. Direct a request with your name, title and address to Systems Division, 315 Fourth Ave., New York 10, N. Y.

Remington Rand

THE FIRST NAME IN RECORD SYSTEMS



One clerk devotes only a third of his time to the operation of this record of five thousand locations filed by intersections and intervening points. This includes the making of all reports pertaining to the data in the record. Complaints, suggestions, and requests are assigned file numbers and posted to the card representing the location to which the communication refers. While the situation is under investigation a colored signal is inserted in the visible margin. When a decision has been made, the signal is moved to indicate completion and remains on the card for statistical purposes until the end of the month. At that time, the visible margins are consulted for rapid and easy preparation of monthly progress reports.

Copyright 1949 by Remington Rand Inc.

Adams Appointment By Nordberg

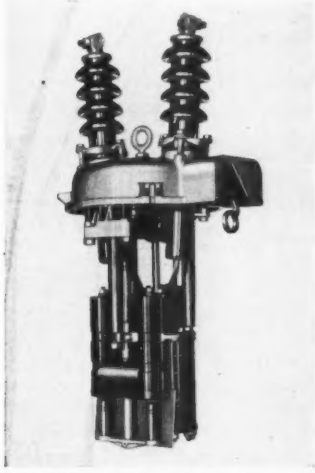
Joseph T. Adams has been appointed Midwestern district manager of the Nordberg Mfg. Co., Milwaukee 7, Wis. His offices will be in Kansas City, Mo.

Joseph T. Adams

Before World War II, Mr. Adams was associated with the Busch-Sulzer Bros. Diesel Engine Co. in St. Louis, Mo., now a Nordberg division. Early in 1947 he was appointed sales engineer and transferred to the Dallas, Texas, office.

Oil Circuit Recloser

A new oil circuit recloser for use on primary lines up to 15 kv with load current of 25 to 100 amperes for protection against fault currents up to 4,000 amperes is offered by the Kyle Company, division of Line Material Co., South Milwaukee, Wis.

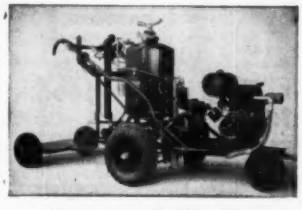


The Kyle circuit recloser, for automatic protection of lines and substations, is available in continuous current ratings in five steps, 25 to 100 amperes.

Completely automatic, the device will reclose three times on a permanent line fault before locking out. If the fault is temporary, the recloser will clear itself on the first, second, or third operation and automatically reset itself for another protective cycle.

Oil circuit reclosers are completely self-contained protective devices which may be used in the place of more expensive oil circuit breakers to protect substations or to sectionalize primary circuits.

THAT'S ALL THE PARTS WE STOCK--OUR BUFFALO-MADE METERS ARE SIMPLE, INTERCHANGEABLE--DON'T HAVE MANY PARTS
• Buffalo Meter *simplicity* of construction and interchangeability of parts make the stock job easier. Average maintenance requirements are readily met from a small supply of parts.
AMERICAN BRONZE CASE
NIAGARA GALV. IRON CASE
WATER METERS
BUFFALO METER COMPANY
2902 MAIN STREET, BUFFALO 14, N. Y.



All-Purpose Striper

Solves Zone-Marking Problem

Self-propelled and completely self-contained, designed to meet the needs of city and town street departments, airports and highways, for accurate high-speed striping.

Clean-cut, attractive lines are assured with K-C Air Curtains. Air actuated traction up to 5 mph with a trailer for the operator. Truck-mounted and other models are available for all requirements. Write for illustrated folder.

KELLY-CRESWELL CO., Xenia, Ohio

DIXIE TANK AND BRIDGE CO

3523 LAMAR AVE.—P. O. BOX 14, MEMPHIS 1, TENNESSEE

Representatives in the Following Cities:

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TAMPA, FLA. Box No. 1642
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NEWARK, OHIO Box No. 623
FARGO, N. D. Box No. 1472
COLUMBIA, S. C. Box No. 472
DALLAS, TEXAS Box No. 1881
DENVER, COLO. Box No. 2037
WAUSAU, WIS. Box No. 682
SAN FRANCISCO, CALIF. Box No. 1445
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THE SILENT WATCHMAN

Complete Service for Elevated Water Tanks—30 Years' Experience

BE SAFE DON'T GAMBLE

Keep the Safety Factor in Your Tank the Dixie Way . . .

by welding seams, pits and rivets which gives a riveted tank 15% more Safety Factor than it had when built. No rivets removed, water supply maintained while work is in progress. On completely re-conditioned jobs, the painting is guaranteed for five years, repairs guaranteed for ten years, provided the tank is painted every five years. Yearly inspection, making all adjustments, if any, without additional cost.

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SOUND PRINCIPLES OF WATER TANK MAINTENANCE and TANK TALK, *by* W. A. RILEY
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THE LARGEST ORGANIZATION OF ITS KIND GIVING SAFE MAINTENANCE AT LOW COST

Using the 5-HP GRAVELY IS LIKE HAVING EIGHT MORE MEN On Your Maintenance Crew

Yes, City records *prove* that the Powerful 5-HP GRAVELY Tractor with its 17 attachments does the work of eight men. . . . Some of these attachments listed below will help you cut your city's maintenance costs:

30-Inch Lawn Mower
72-Inch Gang Mowers
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50-Gallon Sprayer
Power Sweeper
Snow Plow
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Seventeen attachments are available. Fill out the coupon below for our NEW 1949 Catalog of GRAVELY Equipment. See how the GRAVELY can save your city money—do the work of eight more men! Mail today!

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PNEUMATICALLY PLACED CONCRETE
DENSE • DURABLE • HIGH STRENGTH

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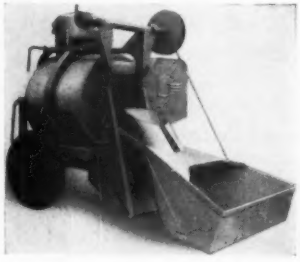
No Caulking

New Type of Letters for Municipal Building

Manville, N. J., selected Railock letters to identify its new municipal building. The letters, manufactured by the Wagner Sign Service, 216 South Hoyne Ave., Chicago 12, Ill., are in 10- and 12-inch sizes for 2-rail mounting with black finish.

New Muller Mixer Has End Discharge

The Muller Machinery Co., Inc, Metuchen, N. J., has introduced an end-discharge, non-tilting mixer equipped with a large skip that has a wide throat, permitting fast, clean discharge into the mixer drum when the loader is raised.



The Muller mixer, showing the large skip.

Equipped with a power loader and an automatic water measuring tank mounted on the discharge side to prevent moisture from clogging up the nose of the skip, the mixer receives directly from wheelbarrows—no high shoveling into the batch hopper.

Tower Elevator 22½ Feet

The Trenton utility tower, shown elevated to 22½ feet, is equipped with a winch and a safety brake that holds the tower in any raised position, and an automatic kick-off that disengages the power when the tower is at its extreme elevated or lowered positions. This tower can be built to meet your requirements by Henry E. Dow, 395 S. Warren St., Trenton, N. J.

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Water Main Pipe
Class 150 and 250

2,100 ft. 4 in.
21,500 ft. 6 in.
16,280 ft. 8 in.
14,250 ft. 10 in.
32,450 ft. 12 in.
3,000 ft. 20 in.
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12-ft. and 18-ft. lengths

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Minimizes conditions that breed and spread infectious germs.
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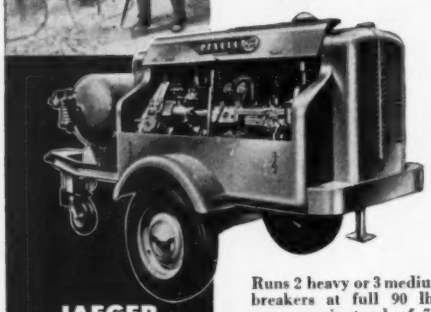
4 days' work
now done in 3



JAEGER MODEL 125 *obsoletes the 105,*

Runs 2 heavy or 3 medium breakers at full 90 lbs. pressure instead of 70, increases production 30% to 40% with the same men and tools.

All new Jaeger sizes—75 to 600 ft.—give comparable work increases.

See your Jaeger distributor or ask for Catalog JC-8

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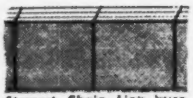

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The lid of this MURDOCK Street Washer locks safety in and trouble out.

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See our catalog in Sweet's

Power Mower Cuts Grass of Any Height

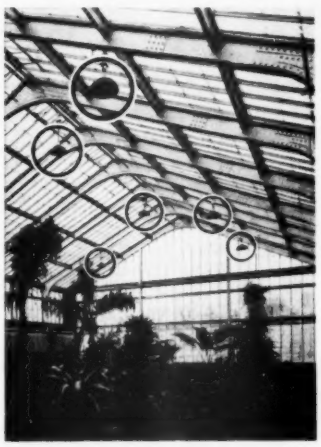
The Whirlwind power mower, manufactured by Whirlwind, Inc., 3707 N. Richards St., Milwaukee 12, Wis., cuts grass with a rotary scythe which whittles down rank, neglected growth, tangled masses, weeds, unwanted tree and shrubbery seedlings, pine cones, twigs, and plain grass that is just too high.

The Grassking, largest in the line, cuts 6 acres per day on fairly open lawns. Mounted on four wheels with 4-inch tire tread on the rear wheels and 3-inch tread on the front wheels, the mower cuts a swath 31 inches wide at adjustable heights of 1 to 4 inches.

Powered by a Briggs & Stratton, 4-cycle, air-cooled engine equipped with ball bearing on power take-off side of the crankshaft, the mower has behind it 6 hp and ample reserve above this rating.

A riding sulky may be obtained.

See How the Garden Grows



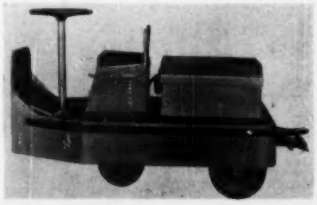
A municipal greenhouse in Gordon Park, Cleveland, with lights equipped with Thompson disconnecting and lowering hangers. Equally effective in the case of street lights on multiple circuits, these hangers facilitate maintenance and repair operations, and permit quick lamp changes. For further information write The Thompson Electric Co., 1101-11 Power Ave., Cleveland 14, Ohio.

Light Towing Unit

A new electric tow unit called the Pony Express Blue Tow Unit, Model BT, which is adaptable for various municipal uses, has been designed by Rocky Mountain Steel Products, Inc., 1359 Wall St., Los Angeles, Calif.

Filling the need for a light towing unit in the transportation of instruments, equipment furniture, etc., it is clean—no oil drip—silent, fire safe, and causes no air pollution—there is no exhaust, as from a gasoline motor. And high safety records and low fire hazards reduce insurance costs.

Since it is equipped with a heavy snub nose and guards for the operator's legs, the tow unit may be pushed as well as pulled. Its speed is three or four times faster than walking speed. Alternate battery voltages and gear ratios can be supplied permitting special engineering to fit specific jobs. Weight and length are minimal to permit use in narrow aisles and elevators.



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Warren cast iron pipe and fittings can be supplied in sizes 2" to 84" with all types of joints and in accordance with standard specifications.

CAST IRON PIPE **CAST IRON PIPE FITTINGS**

GREY IRON CASTINGS

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WARREN PIPE COMPANY OF MASS., INC.
75 FEDERAL ST., BOSTON, MASS.

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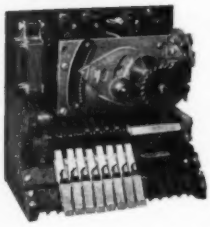
. . . and there's a very good reason:

When cities like Los Angeles, New York, Philadelphia and some of the other BIG ones select MARBELITE Traffic Signals and Controllers, you know they've checked the field carefully . . . and from every angle. ADVANCED DESIGN, DEPENDABILITY and ECONOMY are basic considerations. If you use Traffic Control equipment, follow the BIG fellows, who specify MARBELITE.



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Marbelite manufactures Traffic Signals and Controllers EXCLUSIVELY.

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New Photoelectric Control For Outdoor Lighting

The Fisher-Pierce Co., Inc., 94 Ceylon St., Boston, Mass., is producing, for interval night illumination, a new single-unit outdoor-lighting control that turns on the lights at a preset value of daylight; the automatic time-switch turns them off at any preset time during the night. Or the time-

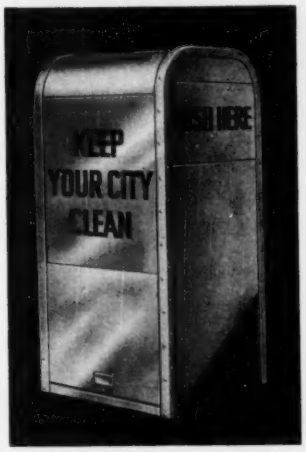
switch can be set to turn on the illumination early in the morning if desired, in which case the lights remain on until the daylight reaches sufficient intensity to activate the photo relay, shutting off the lights until needed again.

The Series 62405 photoelectric relay, consisting of a light sensitive photo-relay and built-in time-switch, is compact in size and operates regardless of weather, location, or time of day.

Extinguisher for Gasoline and Electric Fires

The American - LaFrance - Foamite Corp., Elmira, N. Y., is making a new dry-chemical fire extinguisher with gas-tight, all-internal expelling gas connections and a built-in safety disc; the No. 30 Alfco has a particularly long range and long duration of discharge. Non-corrosive, non-toxic, non-conductor of electricity, and non-freezing, the dry chemical is recommended for flammable liquid and electrical fires.

Smithson Trash Receptacles



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- LOW COST OF MAINTENANCE
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Re-conditioned Pipe—Excellent condition.

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1000 " 24 " " "

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24-12x12-inch crosses
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Other C. I. B. & S. Fittings—all types and sizes in stock.

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New flange and hub-end valves in stock—A.W.W.A.

We cut pipe to your measurement.

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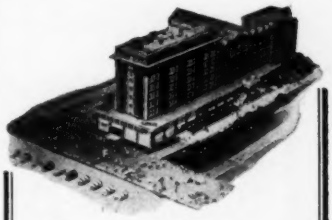

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New North Dakota State Law prohibits the use of parking meters. Therefore, we invite bids on all or any portion of the 854 meters. Meters may be examined by potential purchasers. Sealed bids will be accepted on the meters on an FOB Fargo basis, packed for shipment, until 12:00 Noon, Friday, April 1, 1949, at the Office of the City Manager, City Hall, Fargo, North Dakota. State number of meters wanted and bid per meter. Bids will be opened in public at the City Manager's Office at the above stated time. Get your bids in early.

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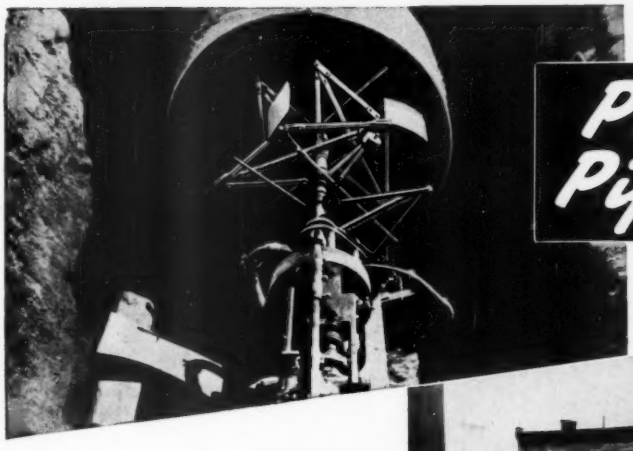

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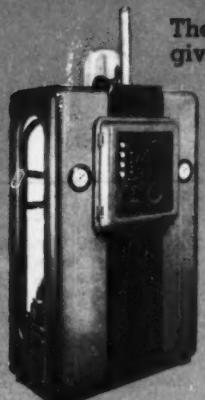

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